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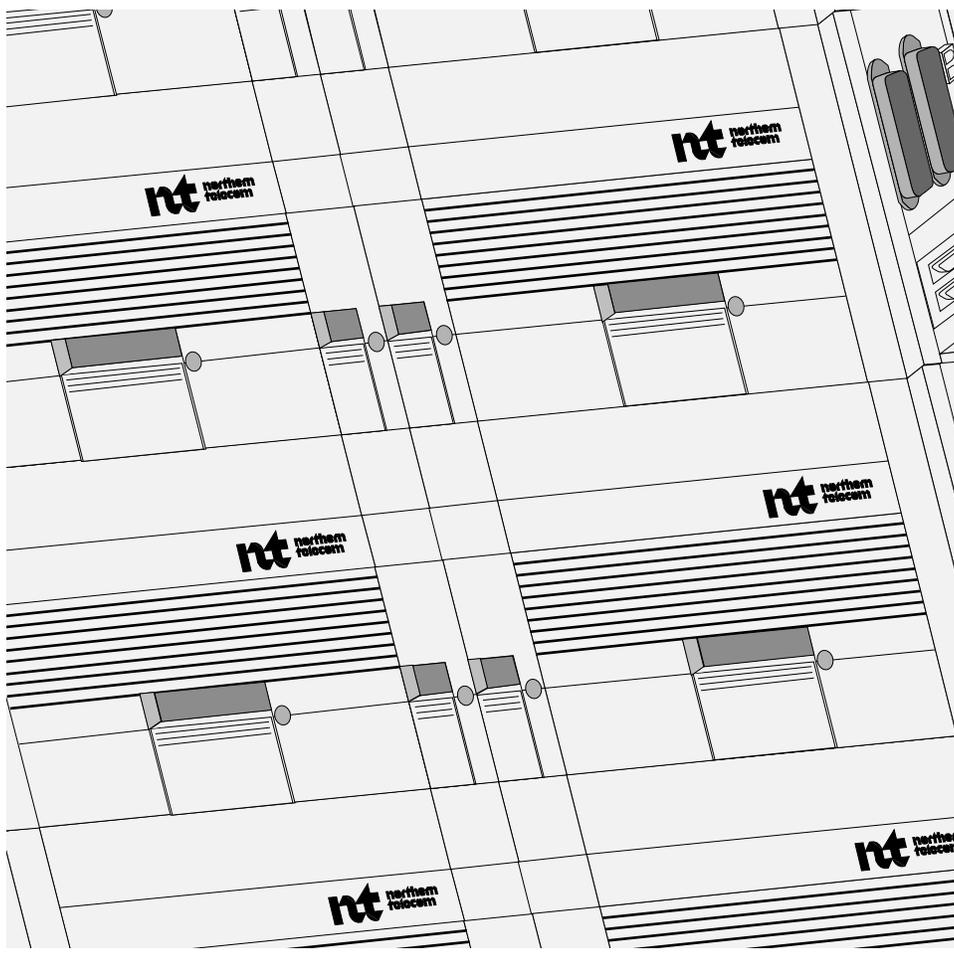
323-3001-548

SONET Products

AccessNode

Circuit Testing from the OPC UI

Issue 1.0 February 1999



NORTEL
NETWORKS™

SONET Products

AccessNode

Circuit Testing from the OPC UI

Document number: 323-3001-548

Document release: Issue 1.0

Date: February 1999

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Printed in Canada

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Publication history

February 1999

AN16 standard release of the document, Issue 1.0. Restructured Chapter 1 for ease of use.

June 1998

AN15 standard 01.01 release of the document.

September 1997

AN14 standard 01.01 release of the document.

July 1996

AN12 standard 01.01 release of the document.

November 1995

AN11 standard 02.01 release of the document.

April 1995

AN10 standard release of the document.

March 1995

AN08 formal addendum release.

December 1994

AN08 standard release of the document.

November 1994

AN07 reissue of standard release.

April 1994

AN07 standard release of the document.

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About this document

This document describes the routine line and loop testing procedures that can be performed from the operations controller (OPC) using the Test Manager tool.

The Test Manager tool offers metallic testing using the AccessNode IRTU test heads, as well as line card diagnostics to complete the NLS/NS testing capability.

Audience

This document is intended for groups testing circuits at the AccessNode OPC user interface, such as:

- system lineup and test (SLAT) engineers/technicians
- field maintenance
- maintenance engineers

How to use this document

Chapter 1 has a task list that you should use as a guide to point you to the correct procedure and page number for each task that you need to perform. These procedures can be performed in any order at any time.

References in this document

This document refers to the following document:

Operations, Administration, and Provisioning, Volume 4A

- *OPC User Interface Description*, 323-3001-301

Line card diagnostics and metallic testing

This chapter has the general information required to guide you through line card diagnostics and metallic testing.

Chapter contents

The following topics are included in this chapter.

Topic	See
Metallic test functions for North America	page 1-2
Metallic test functions for Hong Kong	page 1-4
Test Manager capabilities	page 1-5
Performing line card diagnostics	page 1-6
Running a metallic testing session	page 1-8
Get continuous result	page 1-13
Stop measurement	page 1-15

Note: See Table 1-1 for a detailed list of procedures in this document.

Metallic test functions for North America

The table below lists the metallic test functions for North America. They can be performed at any time and in any order. The novice user should go first to the *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A, then to the specific procedure required. The experienced user can go directly to the appropriate procedure.

Table 1-1
Metallic test functions for North America

Topic	See
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Procedure 1-2 Running a metallic testing session	page 1-8
Procedure 1-3 Get continuous result	page 1-13
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Procedure 2-1 Measure capacitance	page 2-2
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Procedure 3-8 Set bridge	page 3-16
Procedure 3-9 Set split and supervision	page 3-18
Procedure 3-10 Test output pulsing	page 3-20
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—continued—	

Table 1-1 (continued)
Metallic test functions for North America

Topic	See
Procedure 4-1 Measure impulse noise	page 4-2
Procedure 4-2 Measure intermodulation distortion	page 4-5
Procedure 4-3 Measure noise	page 4-7
Procedure 4-4 Measure peak-to-average ratio	page 4-9
Procedure 4-5 Measure phase jitter	page 4-11
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Procedure 4-7 Measure tone	page 4-15
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Procedure 5-6 Set monitor listen	page 5-11
Procedure 5-7 Set talk	page 5-13
Procedure 6-1 Connect loopback	page 6-2
Procedure 6-2 Disconnect loopback	page 6-4
—end—	

Metallic test functions for Hong Kong

To test dial pulse terminating (DPT) services in the Hong Kong environment you must use the test manager user interface (TMUI) on the operations controller (OPC) to control test sessions for the integrated remote test unit (IRTU). The TMUI allows full access to IRTU functionality. In the Hong Kong environment, only the following commands produce accurate results for DPT services.

Table 1-2
Metallic test functions for Hong Kong

Topic	See
Procedure 1-4 Stop measurement	page 1-15
Procedure 2-1 Measure capacitance	page 2-2
Procedure 2-2 Measure current	page 2-4
Procedure 2-3 Measure resistance	page 2-6
Procedure 3-1 Connect battery	page 3-2
Procedure 3-2 Connect ground	page 3-4
Procedure 3-3 Connect short	page 3-6
Procedure 3-5 Measure signaling resistance	page 3-10
Procedure 3-8 Set bridge	page 3-16
Procedure 3-9 Set split and supervision	page 3-18
Procedure 3-10 Test outputting	page 3-20
Procedure 3-12 Disconnect termination	page 3-25
Procedure 4-3 Measure noise	page 4-7
Procedure 4-7 Measure tone	page 4-15
Procedure 4-11 Send tone signal	page 4-23
Procedure 5-1 Disconnect monitor	page 5-2
Procedure 5-2 Set monitor bridge	page 5-3
Procedure 5-3 Set monitor establish	page 5-5
Procedure 5-4 Set monitor filter	page 5-7
Procedure 5-5 Set monitor level	page 5-9
Procedure 5-6 Set monitor listen	page 5-11
Procedure 5-7 Set talk	page 5-13

Test Manager capabilities

The Test Manager enables you to troubleshoot customer service problems on AccessNode portions of non-locally switched and non-switched special service circuits. The Test Manager allows testing on all DMS-X, MVI, and universal digital loop carrier (UDLC) services, including locally-switched.

The Test Manager tool offers metallic testing using the AccessNode IRTU test heads, as well as line card diagnostics to complete the non-locally switched services/non-switched services (NLS/NS) testing capability.

Line card diagnostics

The Test Manager allows you to initiate line card diagnostics on a test point.

Metallic testing

Loop testing is accomplished by remotely connecting test circuitry (test head) to the loop at a predefined test access location termed a test point.

The AccessNode line card provides metallic access to the circuit. The AccessNode houses two metallic test heads on the IRTU circuit pack.

The Test Manager controls AccessNode metallic test points within the OPC management domain. The tool issues a sequence of test functions to be applied at a specific location of a circuit (that is, a test point), which is located within the Remote Fiber Terminal (RFT) network element. The test session starts with a connect test access function and ends with a disconnect test access function.

Note: The Connect command will not be completed if the network element (NE) is not properly named. When naming an NE (if the NE name is to be used in conjunction with TL-1 target identifier [TID] and source identifier [SID] identifiers), the TL-1 TID/SID permissible character set must be followed. This character set includes uppercase or lowercase letters (a-z), numbers (0-9), special characters (dash, underscore, period). The special characters cannot appear as the first character in the name.

Procedure 1-1

Performing line card diagnostics

Use this procedure to perform line card diagnostics.

Requirements

To do this procedure, you must do the following:

- have a userID and password that allow you access to the operations controller (OPC)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action						
1	<p>Proceed according to the following table:</p> <table border="1"> <thead> <tr> <th>If you are testing a</th> <th>Then</th> </tr> </thead> <tbody> <tr> <td>MVI or DMS-X line</td> <td>Go to step 2.</td> </tr> <tr> <td>UDLC line</td> <td>Go to step 3.</td> </tr> </tbody> </table>	If you are testing a	Then	MVI or DMS-X line	Go to step 2.	UDLC line	Go to step 3.
If you are testing a	Then						
MVI or DMS-X line	Go to step 2.						
UDLC line	Go to step 3.						
2	<p>Issue the following command at the OPC prompt:</p> <pre>dms10test -s <neid> <IG#> <enable></pre> <p>where</p> <table> <tbody> <tr> <td><neid></td> <td>the network element ID number</td> </tr> <tr> <td><IG#></td> <td>the interface group number where the MVI line card to be tested exists</td> </tr> <tr> <td><enable></td> <td>enable or disable</td> </tr> </tbody> </table> <p><i>The status of each interface group appears.</i></p> <p>Note: This command works for MVI or DMS-X lines only.</p>	<neid>	the network element ID number	<IG#>	the interface group number where the MVI line card to be tested exists	<enable>	enable or disable
<neid>	the network element ID number						
<IG#>	the interface group number where the MVI line card to be tested exists						
<enable>	enable or disable						
3	<p>Log in to the OPC and open the Test Manager tool.</p> <p><i>The Test Manager main window appears.</i></p>						
4	<p>Fill in the Network Element field:</p> <ol style="list-style-type: none"> Display the chooser menu by pressing Ctrl_L / (or Keypad 3). Using the arrow keys, move to the NE you want, then press Space (or Keypad 0). 						

—continued—

Procedure 1-1 (continued)
Performing line card diagnostics

- | Step | Action |
|------|---|
| 5 | Tab to the CD Shelf field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3).Using the arrow keys, move to the CD Shelf you want, then press Space (or Keypad 0). |
| 6 | Tab to the Line card field and then enter the appropriate line card slot number (from 1 to 96). |
| 7 | Tab to the Diagnose button, then press Ctrl_A (or Keypad 0).
<i>A Test Point Warning dialog appears.</i> |

**CAUTION****Loss of service**

Testing a line card while it is carrying traffic causes the line card to drop the call.

- 8 Tab to the OK button, then press Ctrl_A (or Keypad 0).
You are returned to the main window. The Results field displays a message that the diagnostics on the line card are in progress.
If the diagnostic command passes, then a message appears stating that the diagnostics have passed.
If the diagnostic command fails, then a message appears stating that the diagnostics have failed.
- 9 To close the tool:
 - Display the window menu by pressing Ctrl_L W (or Keypad 6).
The window menu appears.
 - Select the Exit command by pressing Space (or Keypad 0).
The tool disappears.

—end—

Procedure 1-2

Running a metallic testing session

Use this procedure to run a metallic testing session.

Requirements

To do this procedure, you must do the following:

- have a userID and password that allow you access to the operations controller (OPC)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301 in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action						
1	Proceed according to the following table: <table><thead><tr><th>If you are testing a</th><th>Then</th></tr></thead><tbody><tr><td>MVI or DMS-X line</td><td>Go to step 2.</td></tr><tr><td>UDLC line</td><td>Go to step 3.</td></tr></tbody></table>	If you are testing a	Then	MVI or DMS-X line	Go to step 2.	UDLC line	Go to step 3.
If you are testing a	Then						
MVI or DMS-X line	Go to step 2.						
UDLC line	Go to step 3.						
2	Issue the following command at the OPC prompt: dms10test -s <neid> <IG#> <enable> where <neid> the network element ID number <IG#> the interface group number where the line card to be tested exists <enable> enable or disable <i>The status of each interface group appears.</i> Note: This command works for MVI or DMS-X lines only.						
3	Log in to the OPC and open the Test Manager tool. <i>The Test Manager main window appears.</i>						
4	Fill in the Network Element field: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3).b. Using the arrow keys, move to the NE you want, then press Space (or Keypad 0).						

—continued—

 Procedure 1-2 (continued)
Running a metallic testing session

- | Step | Action |
|------|--|
| 5 | Tab to the CD Shelf field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). b. Using the arrow keys, move to the CD Shelf you want, then press Space (or Keypad 0). |
| 6 | Tab to the Line card field and enter the appropriate line card slot number (from 1 to 96). |
| 7 | Tab to the Connect button, then press Ctrl_A (or Keypad 0).
<i>If the line card is unequipped or unprovisioned or mismatched, a Test Point Warning appears and the Connect command is not completed. Choose the OK button to remove the warning and return to step 6.</i> |

**CAUTION****Loss of service**

Testing a line card while it is carrying traffic causes the line card to drop the call.

Note: The Connect command is not completed if the NE is not properly named. When you name an NE (if the NE name is to be used with TL1 TID and SID identifiers), you must use the TL1 TID/SID permissible character set. This character set includes uppercase or lowercase letters (a-z), numbers (0-9), special characters (dash, underscore, period). The special characters cannot appear as the first character in the name.

If the test point is valid, the Test Point Connect Parameters dialog appears. The parameters in this dialog vary based on the type of service used at the test point.

- | | |
|---|--|
| 8 | Respond to the parameters in the Test Point Connect Parameter dialog. To move from parameter to parameter, use your Tab key. <ol style="list-style-type: none"> a. For Test head TLP fields: These are the provisioned values, and cannot be edited. b. For Signaling operation buttons: Use the arrow keys to move to the operation you want (can include Loop normal [default], Ground start, or Automatic line options), then press Ctrl_A (or Keypad 0).
<i>After you select an option, a diamond shape appears within the brackets beside the option.</i> c. For Monitor/talk line telephone number: To establish a monitor/talk callback, enter the telephone number (up to 32 characters, including 0...9, *, #, A, B, C, D, W [wait up to 30 seconds for dial tone], P [pause 6 seconds], or T [pause 1 second]). |
|---|--|

—continued—

1-10 Line card diagnostics and metallic testing

Procedure 1-2 (continued)

Running a metallic testing session

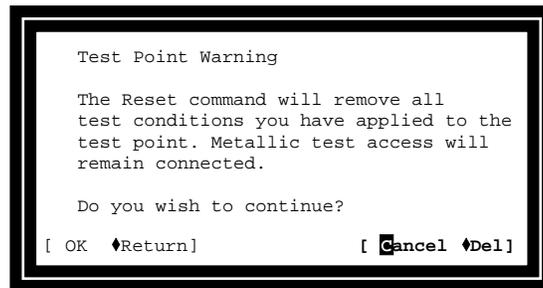
Step	Action								
9	Tab to the OK button, then press Ctrl_A (or Keypad 0). To cancel, tab to the Cancel button, then press Ctrl_A (or Keypad 0). <i>The Main Testing dialog appears. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>								
10	Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear. (All commands are in one or more of these categories.)</i>Using the arrow keys, move to the category you want, then press Space (or Keypad 0).								
11	Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to the category you want, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>								
12	Tab to the Parameters field (if any) and respond to the parameters shown. To move from parameter to parameter, use your Tab key. <ol style="list-style-type: none">For parameters shown in a field: Default values are shown. To change them, enter a new value.For parameters shown in a field with a chooser: Default values are shown. To change them, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.For parameters shown using buttons: Use the arrow keys to move to the option you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>								
13	You can do a number of things at this point. <table><thead><tr><th>If you want to</th><th>Then go to</th></tr></thead><tbody><tr><td>execute the command</td><td>step 14</td></tr><tr><td>restore the test point to the conditions that existed after connection</td><td>step 16</td></tr><tr><td>disconnect the test point</td><td>step 18</td></tr></tbody></table>	If you want to	Then go to	execute the command	step 14	restore the test point to the conditions that existed after connection	step 16	disconnect the test point	step 18
If you want to	Then go to								
execute the command	step 14								
restore the test point to the conditions that existed after connection	step 16								
disconnect the test point	step 18								

—continued—

Procedure 1-2 (continued)
Running a metallic testing session

- | Step | Action |
|------|---|
| 14 | <p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>Once the command execution is completed:</i></p> <ul style="list-style-type: none"> —the graphic area may be updated with feedback information. —for information regarding special terminations, applied test signals, and loopbacks, the Conditions applied field is loaded with the responses. —for measurement commands, the Measurement results field is loaded with command results. |
| 15 | <p>To view the command history of the current test session, tab to the Hist button, then press Ctrl_A (or Keypad 0).</p> <p><i>The Session History dialog appears.</i></p> <p>To remove the dialog and return to the Main Testing dialog, select the Done button by pressing Ctrl_A (or Keypad 0).</p> |
| 16 | <p>Tab to the Reset button, then press Ctrl_A (or Keypad 0).</p> <p><i>The following test point warning dialog appears.</i></p> |

FW-21569



- | | |
|----|--|
| 17 | <p>Tab to the OK button, then press Ctrl_A (or Keypad 0).</p> <p><i>The main testing dialog appears.</i></p> <p>Go to step 10 to run another test on the test point.</p> |
| 18 | <p>Tab to the Disc button, then press Ctrl_A (or Keypad 0).</p> <p><i>A test point warning dialog appears.</i></p> |
| 19 | <p>Tab to the OK button, then press Ctrl_A (or Keypad 0).</p> <p><i>The main window appears.</i></p> |

If you want to	Then go to
specify a new test point	step 4
exit the tool	step 20

—continued—

1-12 Line card diagnostics and metallic testing

Procedure 1-2 (continued)

Running a metallic testing session

Step	Action
20	To close the tool: <ol style="list-style-type: none">Display the window menu by pressing Ctrl_L W (or Keypad 6). <i>The window menu appears.</i>Select the Exit command by pressing Space (or Keypad 0). <i>The tool disappears.</i>

—end—

Procedure 1-3

Get continuous result

Use this command to obtain intermediate results of an ongoing impulse noise measurement. You can also use this command with the Measure Transients command.

Note: This command does not terminate the measure impulse noise test.

For the Get Continuous Result command to be enabled, the measure impulse noise test must be in progress.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- execute the impulse noise command (see Procedure 4-1 on page 4-2)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed, with the execution of the Impulse noise command completed. No Measurement Results are available for the impulse noise.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—are displayed.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).

—continued—

1-14 Line card diagnostics and metallic testing

Procedure 1-3 (continued)

Get continuous result

Step	Action
2	Tab to the Command field and fill it in: <ul style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to Get Cont. Result command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>
3	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>Successful execution of the command results in an intermediate response from the current impulse noise or transients measurement.</i> <i>Text is also time stamped and entered into the history dialog.</i>

—end—

Procedure 1-4

Stop measurement

Use this procedure to terminate a measurement command. This command is only valid for Measure Impulse Noise.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—are displayed.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to Stop Measurement command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>
3	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>In the graphic area, any received condition is removed.</i> <i>In addition, the final response for the measurement being stopped appears in the Measurement results field.</i> <i>Text is also time stamped and entered into the history dialog.</i>

—end—

Multimeter measurements

This chapter has procedures for multimeter measurements.

Chapter contents

The following tasks are included in this chapter.

Topic	See
Procedure 2-1, Measure capacitance	page 2-2
Procedure 2-2, Measure current	page 2-4
Procedure 2-3, Measure resistance	page 2-6
Procedure 2-4, Measure resistance simplex	page 2-8
Procedure 2-5, Measure voltage	page 2-10
Procedure 2-6, Measure voltage simplex	page 2-12

Procedure 2-1

Measure capacitance

Use this procedure to measure the capacitance of the circuit under test.

The Measure Capacitance command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Capacitance command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-1 (continued)

Measure capacitance

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. For Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to the option (A, B or E/M) you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".</p> <p>c. For Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>d. For Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field. (A "0.000 uF [over range]" result indicates external conditions prevented the measurement from being made.)</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 2-2

Measure current

Use this procedure to measure the AC or DC current on a specified lead of the circuit under test.

The Measure Current command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Current command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-2 (continued)

Measure current

Step	Action
3	<p data-bbox="521 390 1300 422">Tab to the Parameters field and respond to the parameters shown.</p> <p data-bbox="521 432 1422 495">a. For Mode: Use the arrow keys to move to either AC or DC, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p data-bbox="521 579 1422 674">b. For Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to the option (A, B or E/M) you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p data-bbox="521 758 1422 852">c. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p data-bbox="570 936 1422 968">If the chosen pair is bridged, then the location field is shown as “Bridged”.</p> <p data-bbox="521 978 1422 1041">d. For Lead: Use the arrow keys to move either Tip or Ring, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p data-bbox="521 1125 1422 1188">e. For Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p data-bbox="521 1203 1219 1234">Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p data-bbox="521 1245 1300 1276"><i>The results of the test are shown in the Measurement results field.</i></p> <p data-bbox="521 1287 1357 1350"><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 2-3

Measure resistance

Use this procedure to measure the resistance of the circuit under test.

The Measure Resistance command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Resistance command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-3 (continued)

Measure resistance

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. For Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to the option (A or B or E/M) you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".c. For Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.d. For Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 2-4

Measure resistance simplex

Use this procedure to measure the resistance simplex of the circuit under test.

For the Measure Resistance Simplex command to be enabled, the following circuit conditions are required:

- must not be 2-wire circuit
- both transmission pairs must be split/bridged
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Resistance Simplex command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-4 (continued)
Measure resistance simplex

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. For Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.b. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".c. For Interval: Default value (Once) is shown, but can be changed (to Single). To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 2-5 Measure voltage

Use this procedure to measure AC or DC voltages on the circuit under test.

The Measure Voltage command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Voltage command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-5 (continued)

Measure voltage

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. For Mode: Use the arrow keys to move to either AC or DC, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. For Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to the option (A, B or E/M) you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>c. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".d. For Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.e. For Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 2-6

Measure voltage simplex

Use this procedure to measure AC or DC voltage simplex on the circuit under test.

For the Measure Voltage Simplex command to be enabled, the following circuit conditions are required:

- must not be 2-wire circuit
- both transmission pairs must be split/bridged
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Voltage Simplex command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 2-6 (continued)

Measure voltage simplex

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. For Mode: Use the arrow keys to move to either AC or DC, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. For Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.c. For Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".d. For Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Supervision measurements

This chapter has procedures for supervision measurements.

Chapter contents

The following tasks are included in this chapter.

Topic	See
Procedure 3-1, Connect battery	page 3-2
Procedure 3-2, Connect ground	page 3-4
Procedure 3-3, Connect short	page 3-6
Procedure 3-4, Measure outpulsing	page 3-8
Procedure 3-5, Measure signaling resistance	page 3-10
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Procedure 3-7, Measure supervision status	page 3-14
Procedure 3-8, Set bridge	page 3-16
Procedure 3-9, Set split and supervision	page 3-18
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Procedure 3-12, Disconnect termination	page 3-25

Procedure 3-1 Connect battery

Use this procedure to perform the Connect Battery test on 2-, 4- and 6/8-wire circuits. This command allows you to connect a battery to either the A or B pair (for 2-, 4- and 6/8-wire circuits) as well as to the E or M lead (for 6/8 wire circuits only) on the drop or line side of the circuit.

For the Connect Battery command to be enabled, the following circuit conditions are required:

- at least one pair must be split
- no transmit, receive, special termination, or loopback conditions can exist

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Special Terminations, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to Connect Battery command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 3-1 (continued)

Connect battery

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Connect to (this parameter is not displayed for 2-wire circuits): Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.c. Lead: Use the arrow keys to move to Tip or Ring, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>Successful execution of the command results in the following message appearing in the Conditions applied field:</i></p> <p><i>“Battery connected to <pair/lead> on <side> side”</i></p> <p style="text-align: center;">—end—</p>

Procedure 3-2

Connect ground

Use this procedure to perform the Connect Ground test on 2-, 4- and 6/8-wire circuits. This command allows you to connect a ground to either the A or B pair (for 2-, 4- and 6/8-wire circuits) as well as to the E or M lead (for 6/8 wire circuits only) on the drop or line side of the circuit.

For the Connect Ground command to be enabled, the following circuit conditions are required:

- at least one pair must be split
- no transmit, receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Special Terminations, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to Connect Battery command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 3-2 (continued)

Connect ground

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Connect to (this parameter is not displayed for 2-wire circuits): Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.c. Lead: Use the arrow keys to move to Tip or Ring, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>Successful execution of the command results in the following message appearing in the Conditions applied field:</i></p> <p><i>“Ground connected to <pair/lead> on <side> side”</i></p> <p style="text-align: center;">—end—</p>

Procedure 3-3

Connect short

Use this procedure to perform the Connect Short test. This command allows you to connect a short to the A or B pair on the drop or line side of the circuit.

For the Connect Short command to be enabled, the following circuit conditions are required:

- applicable transmission pairs must be split
- no transmit, receive, special termination, or loopback conditions can exist

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Special Terminations, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to Connect Short command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 3-3 (continued)

Connect short

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Pair: Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>Successful execution of the command results in the following message appearing in the Conditions applied field:</i></p> <p><i>“Short connected to <pair> pair on <side> side”</i></p> <p>—end—</p>

Procedure 3-4

Measure outpulsing

Use this procedure to measure outpulsing. You can measure the outpulsing of the circuit under test. You cannot use this command for digital data service (DDS) and 2-wire transmission only/equalized transmission only (TO/ETO) circuits.

For the Measure Outpulsing command to be enabled, the following circuit conditions are required:

- all pairs split for 2-wire, 4-wire; transmission pairs split or both E/M split for 6/8-wire
- not allowed for DDS
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Signaling and Supervision, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>

—continued—

Procedure 3-4 (continued)
Measure outputting

Step	Action
	<p>b. Using the arrow keys, move to the Measure Outputting command, then press Space (or Keypad 0).</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Addressing Format: Default value (Dial pulse) is shown, but can be changed (to Dialtone or Multifrequency). To change it, display the chooser by pressing Ctrl_L / (or Keypad 3). Choose the option you want.</p> <p>b. Components: Use the arrow keys to move to the components you want, then press Ctrl_A (or Keypad 0). You can deselect an option in the same way.</p> <p><i>As you select a component, an asterisk appears within the brackets beside it. If you deselect a component, the asterisk is removed.</i></p> <p>c. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>The results of the test are shown in the Measurement results field.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 3-5

Measure signaling resistance

Use this procedure to measure the signaling resistance on the circuit under test.

For the Measure Signaling Resistance command to be enabled, the following circuit conditions are required:

- must be a 6/8 W circuit
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Multimedia, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to the Measure Signaling Resistance command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 3-5 (continued)
Measure signaling resistance

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>c. Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field. Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 3-6

Measure signaling voltage

Use this procedure to measure the signaling voltage on the circuit under test.

For the Measure Signaling Voltage command to be enabled, the following circuit conditions are required:

- must be a 6/8 W circuit
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
------	--------

- | | |
|---|---|
| | <i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i> |
| 1 | Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3).
<i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Multimedia, then press Space (or Keypad 0). |
| 2 | Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3).
<i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to the Measure Signaling Voltage command, then press Space (or Keypad 0).
<i>The input parameters (if any) for the selected command appear in the Parameters box.</i> |

—continued—

Procedure 3-6 (continued)
Measure signaling voltage

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Mode: Use the arrow keys to move to AC or DC, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>c. Leads: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>d. Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 3-7

Measure supervision status

Use this procedure to measure the supervision status on the circuit under test.

For the Measure Supervision Status command to be enabled, the following circuit conditions are required:

- the circuit must be bridged
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Signaling & Supervision, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to the Measure Supervision Status command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 3-7 (continued)
Measure supervision status

Step	Action
3	Tab to the Parameters field. a. The default Analysis Mode appears. To change it, display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appear. All invalid commands are disabled.</i> b. Using the arrow keys, move to the option you want, then press Space.
4	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i>

—end—

Procedure 3-8

Set bridge

Use this procedure to

- remove all test conditions from the circuit
- bridge all pairs
- connect the monitor circuit to the transmission pairs if a monitor/talk line is established

The Set Bridge command cannot be enabled if a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
------	--------

- The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.*
- | | |
|---|--|
| 1 | Fill in the Category field: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3).
<i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>Using the arrow keys, move to Transmission, then press Space (or Keypad 0). |
| 2 | Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3).
<i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to Set Bridge command, then press Space (or Keypad 0).
<i>The input parameters (if any) for the selected command appear in the Parameters box.</i> |

—continued—

Procedure 3-8 (continued)

Set bridge

Step	Action
-------------	---------------

- | | |
|----------|--|
| 3 | <p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>The graphic area shows all pairs bridged, a full-monitored bridge condition, and all transmit and talk conditions removed.</i></p> <p><i>In addition, the Conditions applied field is cleared, if necessary.</i></p> <p><i>Text is also time stamped and entered into the history dialog.</i></p> |
|----------|--|

—end—

Procedure 3-9

Set split and supervision

Use this procedure to split all or portions of the circuit under test and apply supervision. The Set Split and Supervision command cannot be enabled if a receive, special termination, or loopback condition exists. A transmission pair cannot be split when the other transmission pair is bridged and has a monitor/listen condition established.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 232-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimedia, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to Set Split & Supervsn command, then press Space (or Keypad 0). Note: You can choose the Set Split & Supervn command from any category. <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

 Procedure 3-9 (continued)
Set split and supervision

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ol style="list-style-type: none"> a. Split (this parameter does not appear for 2-wire circuits): Default value appears. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want. b. Supervision—Drop direction: Default value appears. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want. c. Supervision—Line direction: Default value appears. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want. d. Battery/Ground leads—Drop direction (this parameter does not appear for DDS, EM, PLR, Tandem, TO, or ETO services): Use the arrow keys to move to Normal or Reverse, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> e. Battery/Ground leads—Line direction (this parameter does not appear for DDS, EM, PLR, Tandem, TO, or ETO services): Use the arrow keys to move to Normal or Reverse, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>The pairs that are split appear as split in the graphic area.</i></p> <p><i>If you select “Open, send SF tone” supervision, VFE (open, VF enabled) appears in the graphic area as the supervision type, a transmit condition is placed on the specified pair in the specified direction, and the following text appears in the Conditions applied field:</i></p> <p style="padding-left: 40px;"><i>Tone: 2600 Hz - 20 dBm0</i></p> <p><i>If you select “Open, stop test signal” supervision, VFE (open, VF enabled) appears in the graphic area as the supervision type. If a transmit condition exists on the specified pair in the specified direction, it is removed, and the Conditions applied field is cleared.</i></p> <p><i>Text is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 3-10 Test output pulsing

Use this procedure to perform an output pulsing test that can address a specified telephone number or provide 15 seconds of continuous output pulsing. You can use the Stop Measurement command to prematurely end this command. Execute the Test Output Pulsing command only when the circuit is in an off-hook state.

For the Test Output Pulsing command to be enabled, the following circuit conditions are required:

- test head must not be active in the circuit ringing direction (unless ringing is allowed in both directions)
- no receive, special termination, or loopback conditions
- for 2/4-wire: all pairs split;
for 6/8-wire: all pairs split or both E/M leads split

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Sig. & Supv. Press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>

—continued—

 Procedure 3-10 (continued)
Test outpulsing

Step	Action
	<p>b. Using the arrow keys, move to the Test Outpulsing command, then press Space (or Keypad 0).</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Timing: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>b. Outpulse toward: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>c. Addressing Format: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3). Choose the option you want.</p> <p>d. Outpulse Digits: Use the arrow keys to move to 15 sec continuous or Address, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>If you select the Address option, you can use the default value or enter another value (up to 32 characters, including 0...9, *, #, A, B, C, D, W (Wait up to 30 seconds for dial tone, P (Pause 6 seconds), or T1 second)).</p> <p>e. Outpulse Frequency (per second): Default value is shown. To change it, enter a new value.</p> <p>f. Percent Break: Default value is shown. To change it, enter a new value.</p> <p>g. Interdigit Interval (in msec): Default value is shown. To change it, enter a new value.</p>

—continued—

3-22 Supervision measurements

Procedure 3-10 (continued)

Test outpulsing

Step	Action
-------------	---------------

- | | |
|----------|---|
| 4 | <p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>A transmit condition (except for dial pulse outpulsing on 6/8-wire circuits) is placed in the graphic area on the pair that transmits in the specified "outward toward" direction. In the case of dial pulse outpulsing on 6/8-wire circuits, a transmit condition is placed on the signaling lead that transmits in the specified "outpulse toward" direction.</i></p> <p><i>If "await dial tone" timing is used, and the remote test unit (RTU) does not detect dial tone, the following text appears in the measurement results field:</i></p> <p><i>Failed to detect dial tone</i></p> <p><i>If the RTU does not time out waiting for dial tone, the following text appears in the Measurement results field:</i></p> <p><i>Call disposition:</i>
<i><cda></i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p> |
|----------|---|

—end—

Procedure 3-11

Test ringing signal

Use this procedure to apply a ringing signal to the circuit. On circuits supporting power ringing, 2-second ON and 4-second OFF trippable power ringing is applied. On all other circuits, 2-second ON and 1.5 second OFF non-trippable pulse ringing is applied. Pulse ringing maps ring-on to onhook supervision and ring-off to offhook supervision. On 3-state Tandem circuits, non-trippable pulse ringing with the power ring cadence is applied. You can use the Stop Measurement command to prematurely end this command.

For the Test Ringing Signal command to be enabled, the following circuit conditions are required:

- ringing must be possible on the circuit
- test head must not be active in the direction opposite the circuit ringing direction (does not apply if ringing allowed in both directions)
- no receive, special termination, or loopback conditions
- for 2/4 Wire: all pairs split;
for 6/8 Wire: all pairs split; both E/M leads split

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimedia, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Sig. & Supv., then press Space (or Keypad 0).

The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.

—continued—

Procedure 3-11 (continued)

Test ringing signal

- 2 Tab to the Command field and fill it in:
 - a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3).
A list of all the commands in the selected category appears. All invalid commands are disabled.
 - b. Using the arrow keys, move to the Testing Ringing Signal command, then press Space (or Keypad 0).
The input parameters (if any) for the selected command appear in the Parameters box.
- 3 Tab to the Parameters field and respond to the parameters shown.
 - a. Signal Voltage: Use the arrow keys to move to 88 Vrms or 130 Vrms, then press Ctrl_A (or Keypad 0).
After you select an option, a diamond shape appears within the brackets beside the option.
 - b. Ringing: Use the arrow keys to move to Normal or Continuous, then press Ctrl_A (or Keypad 0).
After you select an option, a diamond shape appears within the brackets beside the option.

If you select the Normal option, you can use the default value or set the number of rings you want (1 to 15) by entering the number.

If you select the Continuous option, you can use the default value or set the number of continuous seconds you want (1 to 5) by entering the number.
 - c. Toward: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0).
After you select an option, a diamond shape appears within the brackets beside the option.
- 4 Tab to the Execute button, then press Ctrl_A (or Keypad 0).
For 2- and 4-wire circuits, transmit and receive conditions are placed on the transmission pairs in the specified direction (no receive conditions appear for duplex signaling [DX] circuits). For 6/8-wire circuits, a transmit condition is placed on the signaling lead that transmits in the specified direction. Existing transmit conditions are removed by this command.
The following text appears in the Measurement results field (for circuits for which ring trip detection is possible):
Ring signal test results:
<rtd>
Where,
rtd is either "No answer" or "Answer detected"
Text entered in the Measurement results field is also time stamped and entered into the history dialog.

—end—

Procedure 3-12

Disconnect termination

Use this procedure to disconnect an existing special termination. This command allows you to remove all special termination conditions applied by the Connect Battery, Connect Short, and Connect Ground commands.

For the Disconnect Termination command to be enabled, the battery, ground, or short special termination condition must exist.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Special Terminations, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to Disconnect Termination command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

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Procedure 3-12 (continued)

Disconnect termination

Step	Action
-------------	---------------

- | | |
|----------|---|
| 3 | <p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>The termination-related text (that is, about the battery, ground, or short conditions) is cleared from the Conditions applied field.</i></p> <p><i>The following text is also time stamped and entered into the history dialog:</i></p> <p><i>“Termination successfully disconnected.”</i></p> |
|----------|---|

—end—

VF measurements

This chapter has procedures for VF measurements.

Chapter contents

The following tasks are included in this chapter.

Topic	See
Procedure 4-1, Measure impulse noise	page 4-2
Procedure 4-2, Measure intermodulation distortion	page 4-5
Procedure 4-3, Measure noise	page 4-7
Procedure 4-4, Measure peak-to-average ratio	page 4-9
Procedure 4-5, Measure phase jitter	page 4-11
Procedure 4-6, Measure return loss	page 4-13
Procedure 4-7, Measure tone	page 4-15
Procedure 4-8, Measure transients	page 4-17
Procedure 4-9, Send intermodulation signal	page 4-19
Procedure 4-10, Send peak-to-average ratio signal	page 4-21
Procedure 4-11, Send tone signal	page 4-23

Procedure 4-1

Measure impulse noise

Use this procedure to measure the Impulse noise of the circuit under test. The Get Continuous Results command can be used to obtain intermediate results of the impulse noise test.

The Measure Impulse Noise command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure Impulse Noise command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

 Procedure 4-1 (continued)
Measure impulse noise

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Location: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>c. Weighting Network: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3). Choose the option you want.</p> <p>d. Threshold: Default value is shown. To change it, enter a new value (0-99).</p> <p>e. Stop measurement: Use the arrow keys to move to Manually or After: _ min, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>f. Counting Rate: Use the arrow keys to move to 8/sec or 100/sec, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The Execute button is disabled.</i></p>
5	<p>Tab to the Command field again and fill it in.</p> <p>a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appear. All invalid commands are disabled.</i></p> <p>b. Using the arrow keys, move to the Get Continuous Result command, then press Space (or Keypad 0).</p>
6	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—continued—

4-4 VF measurements

Procedure 4-1 (continued)
Measure impulse noise

Step	Action						
7	<table border="1"><thead><tr><th>If you want to</th><th>Then go to</th></tr></thead><tbody><tr><td>get another continuous result</td><td>step 5</td></tr><tr><td>stop the measurements</td><td>step 8</td></tr></tbody></table>	If you want to	Then go to	get another continuous result	step 5	stop the measurements	step 8
If you want to	Then go to						
get another continuous result	step 5						
stop the measurements	step 8						
8	<p>Tab to the Command field again and fill it in.</p> <p>a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appear. All invalid commands are disabled.</i></p> <p>b. Using the arrow keys, move to the Stop Measurement command, then press Space (or Keypad 0). <i>A final measurement is made for the impulse noise and the result appears in the Measurement results field.</i></p>						
9	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The last measurement for the impulse noise is shown in the Measurement results field.</i></p>						

—end—

Procedure 4-2

Measure intermodulation distortion

Use this procedure to measure the Intermodulation Distortion on a specified lead of the circuit under test.

To measure intermodulation distortion, execute this command twice:

- on the first execution, use the distortion product mode to measure the intermodulation distortion with a four-tone test signal applied to the circuit
- on the second execution, use the signal to noise mode to make a second measurement with a two-tone test signal applied

The Measure Intermodulation Distortion command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).

—continued—

4-6 VF measurements

Procedure 4-2 (continued)

Measure intermodulation distortion

Step	Action
2	<p>Tab to the Command field and fill it in:</p> <ul style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to the Measure IMD command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".c. Mode: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-3

Measure noise

Use this procedure to measure noise. This command allows you to measure the noise of the circuit under test.

The Measure Noise command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Noise command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

4-8 VF measurements

Procedure 4-3 (continued)

Measure noise

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".</p> <p>c. Weighting Network: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p> <p>d. Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-4

Measure peak-to-average ratio

Use this procedure to measure the Peak-to-Average Ratio (PAR). This command allows you to measure the noise of the circuit under test.

The Measure PAR command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Peak to Average Ratio command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

4-10 VF measurements

Procedure 4-4 (continued)

Measure peak-to-average ratio

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>If the chosen pair is bridged, then the location field is shown as "Bridged".</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-5

Measure phase jitter

Use this procedure to measure the phase jitter of the circuit under test.

The Measure Phase Jitter command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Phase Jitter command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

4-12 VF measurements

Procedure 4-5 (continued)
Measure phase jitter

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Frequency Band: Use the arrow keys to move the option (Low [4 to 300 Hz] or High [20 to 300 Hz]) you want, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>c. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> <p>If the chosen pair is bridged, then the location field is shown as "Bridged".</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-6

Measure return loss

Use this procedure to measure the return loss on the circuit under test.

For the Measure Return Loss command to be enabled, the following circuit conditions are required:

- all transmission pairs split
- no receive, transmit, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301*, in *Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Return Loss command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

4-14 VF measurements

Procedure 4-6 (continued)

Measure return loss

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".c. Filter: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.d. Output Power Level: To change the displayed value (to a 1- or 2- digit integer), display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.e. Loss Compensation (not displayed for 2-wire): Enter a decimal number.f. Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-7

Measure tone

Use this procedure to measure the frequency and level of an externally-applied tone.

The Measure Tone command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Tone command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 4-7 (continued)

Measure tone

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".</p> <p>c. Interval: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3) and choose the option you want.</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-8

Measure transients

Use this procedure to measure the transients on the circuit under test.

The Measure Transients command cannot be enabled when a receive, special termination, or loopback condition exists.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Measure Transients command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

4-18 VF measurements

Procedure 4-8 (continued)

Measure transients

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Location: If the chosen pair is split, you must choose an option. Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If the chosen pair is bridged, then the location field is shown as "Bridged".c. Phase Hit Threshold: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3). Choose the option you want.d. Gain Hit Threshold: Default value is shown. To change it, display the chooser by pressing Ctrl_L / (or Keypad 3). Choose the option you want.e. Count Rate: Choose the option (8/sec or 100/sec) you want by moving to it using your arrow keys, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>f. Stop Measurement: Use the arrow keys to move to Manually or After: _ min, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i> If you choose After _min, then you must enter the number of minutes (1 to 9999).
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The results of the test are shown in the Measurement results field.</i> <i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-9

Send intermodulation signal

Use this procedure to send a intermodulation test signal on the circuit under test.

For the Send Intermodulation Signal command to be enabled, the following circuit conditions are required:

- no receive, special termination, or loopback conditions
- at least one transmission pair is split

Once executed, this command will set a transmit condition on the specified pair and direction; it will also remove the previous transmit and talk conditions.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> a. Display the chooser menu by press Ctrl_L / (or Keypad 3) <i>A list of all commands in the selected category appears. All invalid commands are disabled.</i>

—continued—

Procedure 4-9 (continued)

Send intermodulation signal

Step	Action
	<p>b. Using the arrow keys, move to the Send IMD Signal command, then press Space (or Keypad 0)</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>c. Tone Set: Use the arrow keys to move to 2 tone or 4 tone, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>d. Level (in dBm0): Default value is shown. To change it, enter a new value (negative integer).</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>A transmit condition is placed in the graphic area on the appropriate pair and side, and the Conditions applied field shows the level of the Intermodulation signal.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-10

Send peak-to-average ratio signal

Use this procedure to send a Peak-to-Average Ratio (PAR) test signal on the circuit under test.

For the Send PAR Signal command to be enabled, the following circuit conditions are required:

- no receive, special termination, or loopback conditions
- at least one transmission pair is split

Note: Connecting a test signal removes an established monitor/talk condition.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>

—continued—

Procedure 4-10 (continued)

Send peak-to-average ratio signal

Step	Action
	<p>b. Using the arrow keys, move to the Send PAR Signal command, then press Space (or Keypad 0).</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. For Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to either A or B, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. For Direction: Use the arrow keys to move to either Drop or Line, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>c. For Level (in dBm0): Default value is shown. To change it, enter a new value (0 or negative).</p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>A transmit condition is placed in the graphic area on the appropriate pair and side, and the Conditions applied field shows the level of the Peak-to-average ratio signal.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 4-11

Send tone signal

Use this procedure to send a sinusoidal test tone on the circuit under test.

For the Send Tone Signal command to be enabled, the following circuit conditions are required:

- no receive, special termination, or loopback conditions
- the selected transmission pair is split

Note: Connecting a test signal removes an established monitor/talk condition.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> Using the arrow keys, move to the Send Tone Signal command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

Procedure 4-11 (continued)

Send tone signal

Step	Action
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <ul style="list-style-type: none">a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>b. Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>c. Frequency (in Hz): Default value is shown. To change it, enter a new value (between 200 and 10,000).d. Level (in dBm0): Default value is shown. To change it, enter a new value (0 or negative).
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>A transmit condition is placed in the graphic area on the appropriate pair and side, and the Conditions applied field shows the frequency and level of the Peak-to-average ratio signal.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Monitor commands

This chapter has procedures about monitor commands.

Chapter contents

The following tasks are included in this document.

Topic	See
Procedure 5-1, Disconnect monitor	page 5-2
Procedure 5-2, Set monitor bridge	page 5-3
Procedure 5-3, Set monitor establish	page 5-5
Procedure 5-4, Set monitor filter	page 5-7
Procedure 5-5, Set monitor level	page 5-9
Procedure 5-6, Set monitor listen	page 5-11
Procedure 5-7, Set talk	page 5-13

Procedure 5-1

Disconnect monitor

Use this procedure to remove an existing monitor condition. This command removes a full monitor bridged, monitor listen, or talk condition. This command does not remove the callback path, but rather removes the monitor circuit from the circuit under test. For the Disconnect Monitor command to be enabled, the monitor or talk condition must exist.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ul style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i>b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ul style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to Disconnect Monitor command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>
3	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>The graphic area shows all monitor, listen, and talk conditions removed. The following text is also time stamped and entered into the history dialog:</i> <i>“Monitor successfully disconnected.”</i>

—end—

Procedure 5-2

Set monitor bridge

Use this procedure to

- bridge the transmission pairs
- remove all test conditions from the transmission pairs
- connect the monitor circuit to the transmission pair(s)

For the Set Monitor Bridge command to be enabled, the following circuit conditions are required:

- monitor established (use Set Monitor Establish command)
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301*, in *Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>

- a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3).

Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.

- b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).

- a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3).

A list of all the commands in the selected category appears. All invalid commands are disabled.

—continued—

5-4 Monitor commands

Procedure 5-2 (continued)

Set monitor bridge

Step	Action
	<p>b. Using the arrow keys, move to Set Monitor Bridge command, then press Space (or Keypad 0).</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>The graphic area shows the transmission pairs bridged, the monitor connected to the transmission pair(s), and all transmit and talk conditions removed.</i></p> <p><i>In addition, the Conditions applied field is cleared, if necessary.</i></p> <p><i>Text is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 5-3

Set monitor establish

Use this procedure to establish a monitor/talk line to your console. Once the monitor/talk line is established, issue Set Monitor Listen, Set Monitor Bridge, and Set Talk to monitor and talk on different points of the circuit under test.

The Set Monitor Establish command cannot be enabled when a receive, special termination, or loopback condition exists.

An ILC circuit must be provisioned for the appropriate test head. This circuit must also be connected to the switch or the command will fail if a dial tone is detected within 2 seconds after the ILC goes off-hook.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to Set Monitor Establish command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

5-6 Monitor commands

Procedure 5-3 (continued)

Set monitor establish

Step	Action
3	Tab to the Parameters field and respond to the parameter. For Phone number: Enter the telephone number (from 1 to 32 characters long, including the characters 0...9, *, #, A, B, C, D, W [wait up to 30 seconds for dial tone], P [pause 6 sec] or T [pause 1 sec]). Any hyphens are ignored in the phone number.
4	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>Your telephone rings when the command has completed successfully.</i> <i>Text is also time stamped and entered into the history dialog.</i>

—end—

Procedure 5-4

Set monitor filter

Use this procedure to remove or restore a 2600-Hz notch filter on the monitor of the circuit under test.

For the Set Monitor Filter command to be enabled, the following circuit conditions are required:

- monitor condition exists
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to Set Monitor Filter command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

5-8 Monitor commands

Procedure 5-4 (continued)

Set monitor filter

Step	Action
3	<p>Tab to the Parameters field.</p> <ol style="list-style-type: none">For Action, use the arrow keys to move to Remove filter or Restore filter.Press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>There are no changes to the main dialog.</i> <i>The following text is also time stamped and entered into the history dialog:</i> <i>"Monitor filter <removed/restored>."</i></p> <p style="text-align: center;">—end—</p>

Procedure 5-5

Set monitor level

Use this procedure to increase or decrease the monitor level by 5-dB increments on the circuit under test.

For the Set Monitor Level command to be enabled, the following circuit conditions are required:

- monitor condition exists
- no receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to Set Monitor Level command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

5-10 Monitor commands

Procedure 5-5 (continued)

Set monitor level

Step	Action
3	<p>Tab to the Parameters field.</p> <ol style="list-style-type: none">Under Change, use the arrow keys to move to Increase 5 dB or Decrease 5 dB.Press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>There are no changes to the main dialog.</i></p> <p><i>The following text is also time stamped and entered into the history dialog:</i></p> <p><i>"Monitor level <increased/decreased> 5 dB."</i></p> <p>—end—</p>

Procedure 5-6

Set monitor listen

Use this procedure to listen selectively to the circuit under test. You can listen on a single transmission pair of the circuit in either the drop or line direction.

For the Set Monitor Listen command to be enabled, the following circuit conditions are required:

- monitor established
- no receive, special termination, or loopback conditions

You cannot establish a monitor/listen condition on a bridged transmission pair when the other transmission pair is split for 4-wire and 6/8-wire circuits.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>

—continued—

5-12 Monitor commands

Procedure 5-6 (continued)

Set monitor listen

Step	Action
	<p>b. Using the arrow keys, move to the Set Mon Listen command, then press Space (or Keypad 0).</p> <p><i>The input parameters (if any) for the selected command appear in the Parameters box.</i></p>
3	<p>Tab to the Parameters field and respond to the parameters shown.</p> <p>a. Pair (this parameter is not displayed for 2-wire circuits): Use the arrow keys to move to A or B, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p> <p>b. Listen toward: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0).</p> <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>A Monitor condition (represented by Mn) appears in the graphic area in the appropriate location, and previous monitor conditions are cleared.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Procedure 5-7

Set talk

Use this procedure to establish a talk path to a specific location on the circuit under test.

For the Set Talk command to be enabled, the following circuit conditions are required:

- monitor established
- no receive, special termination, or loopback conditions
- all transmission pairs split

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
	<i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i>
1	Fill in the Category field: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—appear.</i> b. Using the arrow keys, move to Talk and Listen, then press Space (or Keypad 0).
2	Tab to the Command field and fill it in: <ol style="list-style-type: none"> a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i> b. Using the arrow keys, move to the Set Talk command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>

—continued—

5-14 Monitor commands

Procedure 5-7 (continued)

Set talk

Step	Action
3	<p>Tab to the Parameters field.</p> <ol style="list-style-type: none">Under Location, use the arrow keys to move to Drop or Line.Press Ctrl_A (or Keypad 0). <p><i>After you select an option, a diamond shape appears within the brackets beside the option.</i></p>
4	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0).</p> <p><i>A Talk condition (represented by Tk) is placed on the pair that transmits in the specified direction. In addition, for 4- and 6/8-wire circuits, a monitor (Mn) condition is placed on the pair that receives from the specified direction.</i></p> <p><i>Text entered in the Measurement results field is also time stamped and entered into the history dialog.</i></p>

—end—

Loopback commands

This chapter has procedures for loopback commands.

Chapter contents

The following tasks are included in this chapter.

Topic	See
Procedure 6-1, Connect loopback	page 6-2
Procedure 6-2, Disconnect loopback	page 6-4

Procedure 6-1

Connect loopback

Use this procedure to perform the Connect Loopback test. This command allows you to connect a 4-wire loopback on to either the drop or line side of the circuit.

For the Connect Loopback command to be enabled, the following circuit conditions are required:

- not for 2-wire circuits
- no transmit, receive, special termination, or loopback conditions

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—are displayed.</i>Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands that fall under the selected category are displayed. All invalid commands are disabled.</i>Using the arrow keys, move to Set Split and Supervision command, then press Space (or Keypad 0).

—continued—

Procedure 6-1 (continued)
Connect loopback

Step	Action
3	Tab to the Execute button, then press Ctrl_A (or Keypad 0).
4	Tab to the Command field and fill it in: <ol style="list-style-type: none">Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>Using the arrow keys, move to Connect Loopback command, then press Space (or Keypad 0).
5	Tab to the Parameters field and respond to the parameters shown. <ol style="list-style-type: none">Direction: Use the arrow keys to move to Drop or Line, then press Ctrl_A (or Keypad 0). <i>After you select an option, a diamond shape appears within the brackets beside the option.</i>Gain: Default value is shown. To change it, enter a new value.
6	Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>Successful execution of the command results in the following message appearing in the Conditions applied field:</i> <i>"Loopback connected on <drop or line> side"</i>

—end—

Procedure 6-2

Disconnect loopback

Use this procedure to perform the disconnect loopback test. This command allows you to remove the loopback applied by the Connect Loopback command. For the Disconnect Loopback command to be enabled, the loopback condition must exist.

Requirements

To do this procedure, you must do the following:

- log into the operations controller (OPC), open the Test Manager tool, and specify and connect the test point address (see Procedure 1-2 on page 1-8)
- read the command conventions for the type of interface you are using (CMT or graphical) in *OPC User Interface Description, 323-3001-301, in Operations, Administration, and Provisioning, Volume 4A*

Action

Step	Action
1	<p><i>The Main Testing dialog is displayed. The top five fields are already filled in. The values are based on the test point specification fields in the main window.</i></p> <p>Fill in the Category field:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>Five categories—Multimeter, Transmission, Sig. & Supv., Talk and Listen, and Special Terminations—are displayed.</i>b. Using the arrow keys, move to Transmission, then press Space (or Keypad 0).
2	<p>Tab to the Command field and fill it in:</p> <ol style="list-style-type: none">a. Display the chooser menu by pressing Ctrl_L / (or Keypad 3). <i>A list of all the commands in the selected category appears. All invalid commands are disabled.</i>b. Using the arrow keys, move to Disconnect Loopback command, then press Space (or Keypad 0). <i>The input parameters (if any) for the selected command appear in the Parameters box.</i>
3	<p>Tab to the Execute button, then press Ctrl_A (or Keypad 0). <i>Successful execution of the command results in the former message, "Loopback connected on <drop or line> side", removed. The following text is also time stamped and entered into the history dialog:</i></p> <p><i>"Loopback successfully disconnected."</i></p>

—end—

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Circuit Testing from the OPC UI

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Publication number: 323-3001-548

Document release: Issue 1.0

Date: February 1999

Printed in Canada

NORTEL
NETWORKS™