



## Performing Node Acceptance Tests

This chapter provides test procedures to verify that installed cards are operating correctly in a NCS 2002 and NCS 2006 node. The procedures are optional.



### Note

The procedures and tasks described in this chapter are applicable to the Cisco NCS 2002 and Cisco NCS 2006 platforms, unless noted otherwise.



### Note

This chapter does not test the transponder (TXP), muxponder (MXP), GE\_XP, 10GE\_XP, GE\_XPE, and 10GE\_XPE, or ADM-10G card installation. Installation and verification for those cards is performed in Chapter 11, “Provision Transponder and Muxponder Cards.”

- [NTP-G168 Performing the Terminal or Hub Node with 40-MUX-C and 40-DMX-C Cards Acceptance Test, page 2](#)
- [NTP-G42 Performing the Terminal Node with 32WSS and 32DMX Cards Acceptance Test, page 4](#)
- [NTP-G167 Performing the Terminal Node with 40-WSS-C and 40-DMX-C Cards Acceptance Test, page 9](#)
- [NTP-G43 Performing the ROADM Node with 32WSS and 32DMX Cards Acceptance Test, page 14](#)
- [NTP-G180 Performing the ROADM Node with 40-WSS-C and 40-DMX-C Cards Acceptance Test, page 26](#)
- [NTP-G276 Performing the 80-Channel n-degree ROADM Node Acceptance Tests, page 31](#)
- [NTP-G44 Performing the Anti-ASE Hub Node Acceptance Test, page 36](#)
- [NTP-G45 Performing the C-Band and L-Band Line Amplifier Node with OSCM Cards Acceptance Test, page 39](#)
- [NTP-G46 Performing the C-Band Line Amplifier Node with OSC-CSM Cards Acceptance Test, page 42](#)
- [NTP-G156 Performing the L-Band Line Amplifier Node with OSC-CSM Cards Acceptance Test, page 46](#)
- [NTP-G47 Performing the C-Band Line Amplifier Node with OSCM and OSC-CSM Cards Acceptance Test, page 50](#)

- [NTP-G157 Performing the L-Band Line Amplifier Node with OSCM and OSC-CSM Cards Acceptance Test, page 53](#)
- [NTP-G49 Performing the Active OADM Node Acceptance Test on a Symmetric Node with OSC-CSM Cards, page 57](#)
- [NTP-G50 Performing the Passive OADM Node Acceptance Test on a Symmetric Node with OSC-CSM Cards, page 64](#)
- [NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test, page 66](#)
- [NTP-G187 Performing the Multiring Site Acceptance Test, page 80](#)
- [NTP-G188 Performing the Native Mesh Node Acceptance Test, page 89](#)
- [NTP-G189 Performing the Node Upgrade Acceptance Test, page 94](#)
- [NTP-G243 Performing the Two-Degree ROADM Node with 40-SMR-1-C and OPT-AMP-17-C Cards Acceptance Test, page 103](#)
- [NTP-G244 Performing the Four Degree ROADM Node with 40-SMR-2-C Cards Acceptance Test, page 107](#)

## NTP-G168 Performing the Terminal or Hub Node with 40-MUX-C and 40-DMX-C Cards Acceptance Test

|                                |                                                                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests a DWDM terminal or hub node with 40-MUX-C and 40-DMX-C cards installed.                                                                                                                             |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                   |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                   |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                           |

**Note**

- Throughout this procedure, Side A refers to Slots 1 through 6, and Side B refers to Slots 12 through 17.
- This procedure tests Side A of hub nodes first, then Side B. If you are testing a terminal node, apply instructions for Side A of the hub node to the terminal side (Side B or Side A) of the terminal node.
- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter they can be used for this procedure. No additional cabling changes are needed.

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**Procedure**

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- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Alarms** tab.
- a) Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** If OSC terminations are created, there will be two alarms, one for low power on the OPT-BST or OPT-BST-E card, and the other an OSC channel alarm.
- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If a different status appears, complete the [NTP-G37 Running Automatic Node Setup](#) task.
- Step 4** Create a physical loopback on the Side A (or terminal) OPT-BST or OPT-BST-E amplifier by using a patchcord with 10-dB bulk attenuators to connect the LINE TX port to the LINE RX port.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will appear due to the OSC signal loopback.
- Step 5** Verify that the OSC link becomes active on the Side A OSCM or OSC-CSM card. (The OSC termination must already be provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 6** Set the tunable laser or the TXP\_MR\_10E\_C card to the first wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm). Refer to the tunable laser manufacturer’s documentation or the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task.
- Step 7** Connect the tunable laser transmitter or TXP\_MR\_10E\_C card DWDM TX port to the CHAN RX 01 port on the Side A (or terminal) 40-MUX-C card using the available patch panel.
- Step 8** Display the Side A (or terminal) 40-MUX-C card in card view.
- Step 9** Click the **Provisioning > Optical Chn > Parameters** tabs.
- Step 10** Change the Port 1 administrative state to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI).
- Step 11** Verify that the Port 1 power level reaches the provisioned VOA Power Ref set point.
- Note** The tunable laser minimum optical output power (Pout) must be 6 dBm. If the output power is lower than the specified value, the 40-MUX-C card might not reach the provisioned set point.

- Step 12** If an OPT-BST, OPT-BST-E, or OPT-BST-L card is installed, complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task on the Side A (or terminal) OPT-BST, OPT-BST-E, or OPT-BST-L to ensure that the amplifier is working properly.
- Step 13** Complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task on the Side A (or terminal) OPT-PRE card to ensure that the amplifier is working properly.
- Step 14** Complete the “[DLP-G78 Verifying the 32MUX-O or 40-MUX-C Card Power](#)” task to verify that the 40-MUX-C card is powered correctly.
- Step 15** Complete the “[DLP-G269 Verifying the 32DMX-O or 40-DMX-C Card Power](#)” task to verify that the 40-DMX-C card is powered correctly.
- Step 16** Restore the default IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state to the 40-MUX-C port that was changed to OOS,MT (ANSI) or Locked,maintenance (ETSI) in step 10.
- Step 17** Repeat steps 6 through 16 for the remaining 31 wavelengths of the 100-GHz grid to verify the correct behavior of all variable optical attenuators (VOAs) inside the 40-MUX-C card.
- Step 18** Remove the loopback created in step 4.
- Step 19** If the node is a hub node, repeat steps 4 through 18 for the Side B cards.
- Step 20** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 21** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the “[DLP-G128 Disable Alarm Filtering](#)” task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

**Stop. You have completed this procedure.**

## NTP-G42 Performing the Terminal Node with 32WSS and 32DMX Cards Acceptance Test

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b> | This acceptance test verifies that a terminal node with 32WSS and 32DMX cards installed is operating properly before you connect it to the network. The test verifies the operation of the amplifiers and also verifies that each 32WSS and 32DMX add/drop and pass-through port operates properly. The test also checks the power levels at each transmit and receive port to ensure that power loss in the cabling is within tolerance. If MMU cards are installed, the test verifies that the MMU insertion loss does not impact add, drop, or pass-through circuits. |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                |                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>1 bulk attenuator (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br>Complete Chapter 14, "Turn Up a Node"                                                                                                                                         |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                             |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                        |

**Note**

- Throughout this procedure, Side A refers to Slots 1 through 6, and Side B refers to Slots 12 through 17.
- This procedure creates an optical loopback on the OPT-BST or OPT-BST-E line. An optical signal is sent from the 32WSS input (add) to the OPT-BST or OPT-BST-E common receive (RX) port and back out the OPT-BST or OPT-BST-E transmit (TX) line. The OPT-BST or OPT-BST-E line receives the looped signal from the OPT-BST or OPT-BST-E TX port. It then passes the signal to the OPT-BST or OPT-BST-E common TX port and into the OPT-PRE common RX line. The OPT-PRE sends the signal to the 32DMX card. The optical signal from the tunable laser or TXP\_MR\_10E\_C card must pass successfully through the 32WSS card and out the 32DMX card.
- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of Chapter 14, "Turn Up a Node" they can be used for this procedure. No additional cabling changes are needed.

**Procedure**

**Step 1** Display the terminal node in node view (single-shelf mode) or multishelf view (multishelf mode).

**Step 2** Click the **Alarms** tab.

- Verify that the alarm filter is not on. Complete the "[DLP-G128 Disable Alarm Filtering](#)" task as necessary.
- Verify that no equipment alarms (indicated by EQPT in the Cond column) appear indicating equipment failure or other hardware problems. If equipment failure alarms appear, investigate and resolve them before continuing.

Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

**Note** If OSC terminations are created, an OSC channel alarm will appear.

- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If a different status appears, or if errors (indicated in red) appear, delete the OSC channels and complete the "NTP-G37 Run Automatic Node Setup" procedure in "Manage the Shelf" chapter. Provision the OSC channels when automatic node setup (ANS) is complete.
- Step 4** Create a physical loopback on the OPT-BST, OPT-BST-E, or OSC-CSM card by using a patchcord with 10-dB bulk attenuators to connect the LINE TX port to the LINE RX port.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will appear due to the OSC signal loopback. This is observed as an alarm on Port 1 of the OSCM or OSC-CSM card.
- Step 5** Wait approximately two minutes, then verify that the OSC link is active on the Side A OSCM or OSC-CSM card by observing whether or not the loss of signal (LOS) alarm on the OSCM or OSC-CSM (and the OPT-BST or OPT-BST-E card, if present) clears. (The OSC termination must already be provisioned. If not, complete the "NTP-G38 Provision OSC Terminations" procedure in "Manage the Shelf" chapter.)
- Note** If the LOS alarm does not clear on the OSC-CSM card, verify that the opwrMin (dBm) Optic Thresholds setting for the OSC-RX port is not higher than the port's Optical Line power value. In the OSC-CSM card view, click the **Provisioning > Optical Line > Optic Thresholds** tabs and record the opwrMin (dBm) setting and compare it to the value found in the Power column for the OSC-RX port in the **Provisioning > Optical Line > Parameters** tabs. Reduce the Optic Thresholds setting for the opwrMin (dBm) value temporarily until the loopback test has been completed to clear the LOS alarm. Reset the Optic Thresholds setting to its original value after clearing the physical loopback.
- Step 6** If you are using a tunable laser, follow the manufacturer's instructions to complete the following substeps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 7](#).
- Set the output power to a nominal value, such as -3 dBm.
  - Set the tuner to the wavelength you will test, then continue with [Step 8](#).
- Step 7** If you are using a TXP\_MR\_10E\_C card, complete the "[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)" task on page 15-23 for the TXP containing the wavelength you will test. Refer to [Table 15-1 on page 15-40](#), if needed.
- Step 8** Using the available patch panel, connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the CHAN RX 01 port on the 32WSS card.
- Note** The tunable laser minimum Pout must be -6 dBm. If the output power is lower than -6 dBm, the 32WSS card might not reach the provisioned set point.
- Step 9** Display the 32WSS card in card view.
- Step 10** Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelengths you will test. Refer to [Table 15-1 on page 15-40](#), if needed.
- Step 11** Click the **Admin State** table cell for the add (CHAN-RX) port carrying the tested wavelength, then choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the drop-down list. For example, if the tested wavelength is 1530.33 nm (shown as 1530.3), you would click the Port 1 (CHAN-RX) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list.
- Step 12** Change the administrative state of the pass-through port corresponding to the port in [Step 8](#) to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI). For example, if the tested wavelength is 1530.33 nm (shown as

1530.3), you would click the Port 33 (PASS-THROUGH) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list. Refer to [Table 15-1 on page 15-40](#), if needed.

- Step 13** Click **Apply**, then click **Yes**.
- Step 14** Click the **Maintenance** tab.
- Step 15** For Channel #1, change the Operating Mode to **Add Drop**.
- Step 16** Click **Apply**, then click **Yes**.
- Step 17** Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelength under test.
- Step 18** Verify that the actual power coming from the tunable laser or TXP\_MR\_10E\_C card shown under the Power column is equal to the specified VOA Power Ref power ( $\pm 0.2$  dB) shown in the same row.
- Step 19** Click the **Optical Line** tab.
- Step 20** Verify that the Port 83 (COM-TX) Power column value is the same as the VOA Power Ref set point in Step 18 ( $\pm 0.5$  dB). This verifies that the optical signal is traveling correctly through the 32WSS card.
- Step 21** If an OPT-BST or OPT-BST-E card is installed, complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task on page 15-4 on the OPT-BST or OPT-BST-E to ensure that the amplifier is working properly.
- Step 22** If an OSC-CSM is installed, continue with [Step 24](#). If an OPT-BST is installed, verify the connection between Port 67 (COM-TX) on the 32WSS and Port 1 (COM-RX) on the OPT-BST or OPT-BST-E cards:
- Display the 32WSS card in card view.
  - Click the **Provisioning > Optical Line** tabs.
  - Record the value in the Power table cell for Port 83 (COM-TX).
  - Display the OPT-BST or OPT-BST-E card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Verify that the value in the Power table cell for Port 1 (COM-RX) is equal to the value recorded in Step [c](#),  $\pm 1.0$  dB. If not, use the “NTP-L22 Cleaning Fiber Connectors” procedure in the *Cisco NCS 2000 Series Hardware Installation Guide* to clean the fiber connection between the OPT-BST or OPT-BST-E card and the 32WSS cards. Check the values again. If they still do not match, contact your next level of support.
- Step 23** If an OPT-BST, OPT-BST-E, or OPT-BST-L card is installed on the Side A or terminal side, complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task on page 15-4 to ensure that the amplifier is working properly.
- Step 24** Complete the following steps to verify the connection between Port 67 (COM-TX) on the 32WSS and Port 2 (COM-RX) on the OSC-CSM card:
- Display the 32WSS card in card view.
  - Click the **Provisioning > Optical Line** tabs.
  - Record the value in Power table cell for Port 67 (COM-TX).
  - Display the OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Verify that the value in the Power table cell for Port 2 (COM-RX) is equal to the value recorded in Step [c](#),  $\pm 1.0$  dB. If not, use the “NTP-L22 Cleaning Fiber Connectors” procedure in the *Cisco NCS 2000 Series Hardware Installation Guide* to clean the fiber connection between the OSC-CSM and 32WSS cards. Check the values again. If they still do not match, contact your next level of support.
- Step 25** Complete the following steps to verify the connection between Port 2 (COM-TX) on the OPT-PRE card and Port 33 (COM-RX) on the 32DMX card:
- Display the OPT-PRE card in card view.

- b) Click the **Provisioning > OptAmpliLine > Parameters** tabs.
  - c) Record the value in Power table cell for Port 2 (COM-TX).
  - d) Display the 32DMX card in card view.
  - e) Click the **Provisioning > Optical Line > Parameters** tabs.
  - f) Verify that the value in the Power table cell for Port 33 (COM-RX) is equal to the value recorded in Step c, +/- 1.0 dB. If not, use the "NTP-L22 Cleaning Fiber Connectors" procedure in the *Cisco NCS 2000 Series Hardware Installation Guide* to clean the fiber connection between the OPT-PRE and 32DMX cards. Check the values again. If they still do not match, contact your next level of support.
- Step 26** Complete the "DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power" task on page 15-5 on the OPT-PRE to ensure that the amplifier is working properly.
- Step 27** Complete the "DLP-G270 Verify the 32DMX or 40-DMX-C Power" task on page 15-14 to verify that the 32DMX card is powered correctly.
- Step 28** Display the 32WSS in card view.
- Step 29** Click the **Maintenance** tab.
- Step 30** For the circuit (channel) under test, click the **Operating Mode** table cell and choose **Not Assigned** from the drop-down list.
- Step 31** Click **Apply**, then **Yes**.
- Step 32** Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelength under test.
- Step 33** Click the **Admin State** table cell. Choose **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)** from the drop-down list for all ports that were changed to OOS,MT or Locked,maintenance.
- Step 34** Click **Apply**, then **Yes**.
- Step 35** Repeat Steps 6 through 34 for the remaining 31 wavelengths of the 100-Ghz grid to verify the correct behavior of all VOAs inside the 32WSS card.
- Step 36** Disconnect the TXP card or tunable laser from the 32WSS card.
- Step 37** Remove the loopback created in Step 4.
- Step 38** Complete the "NTP-G37 Run Automatic Node Setup" procedure in "Manage the Shelf" chapter to restore the original configuration.
- Step 39** Click the **Alarms** tab.
- a) Verify that the alarm filter is not on. Complete the "DLP-G128 Disable Alarm Filtering" task as necessary.
  - b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing. Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

**Stop. You have completed this procedure.**

## DLP-G270 Verifying the 32DMX or 40-DMX-C Power

|                |                                                                                         |
|----------------|-----------------------------------------------------------------------------------------|
| <b>Purpose</b> | This task verifies that the 32DMX or 40-DMX-C card is provisioned to the correct power. |
|----------------|-----------------------------------------------------------------------------------------|

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|--------------------------------|--------------------------------------|
| <b>Tools/Equipment</b>         | None                                 |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a> |
| <b>Required/As Needed</b>      | As needed                            |
| <b>Onsite/Remote</b>           | Onsite or remote                     |
| <b>Security Level</b>          | Superuser only                       |

### Procedure

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- Step 1** Display the 32DMX or 40-DMX-C card in card view.
- Step 2** Click the **Provisioning > Optical Line > Parameters** tabs.
- Step 3** Change the administrative state for the COM TX (Port 33 for the 32DMX or Port 41 for the 40-DMX-C) to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)**
- Step 4** Click **Apply**, then **Yes**.
- Step 5** Verify that the value shown in the power column is equal to the specified VOA Power Ref column (+/- 0.2dB).
- Step 6** (Optional) Connect a power meter to the CHAN TX 01 port through the patch panel. Verify that the physical optical power value coming from the 32DMX or 40-DMX-C drop Port 1 is consistent with the Power value on the Parameters tab, +/- 1.0 dBm.
- Step 7** Change the administrative state for the COM TX port to **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)**.
- Step 8** Return to your originating procedure (NTP).
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## NTP-G167 Performing the Terminal Node with 40-WSS-C and 40-DMX-C Cards Acceptance Test

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b> | This acceptance test verifies that a terminal node with 40-WSS-C and 40-DMX-C cards installed is operating properly before you connect it to the network. The test verifies the operation of the amplifiers and also verifies that each 40-WSS-C and 40-DMX-C add/drop and pass-through port operates properly. The test also checks the power levels at each transmit and receive port to ensure that power loss in the cabling is within tolerance. If MMU cards are installed, the test verifies that the MMU insertion loss does not impact add, drop, or pass-through circuits. |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                |                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>1 bulk attenuator (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                             |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                        |

**Note**

- Throughout this procedure, Side A refers to Slots 1 through 6, and Side B refers to Slots 12 through 17.
- This procedure creates an optical loopback on the OPT-BST or OPT-BST-E line. An optical signal is sent from the 40-WSS-C input (add) to the OPT-BST or OPT-BST-E common receive (RX) port and back out the OPT-BST or OPT-BST-E transmit (TX) line. The OPT-BST or OPT-BST-E line receives the looped signal from the OPT-BST or OPT-BST-E TX port. It then passes the signal to the OPT-BST or OPT-BST-E common TX port and into the OPT-PRE common RX line. The OPT-PRE sends the signal to the 40-DMX-C. The optical signal from the tunable laser or TXP\_MR\_10E\_C must pass successfully through the 40-WSS-C and out the 40-DMX-C.
- If the shelf is equipped with an OSC-CSM, this procedure creates an optical loopback on the OSC-CSM line. An optical signal is sent from the 40-WSS-C input (add) to the OSC-CSM common receive (RX) port and back out the OSC-CSM transmit (TX) line. The OSC-CSM line receives the looped signal from the OSC-CSM-TX port. It then passes the signal to the OSC-CSM common TX port and sends the signal to the 40DMX-C. The optical signal from the tunable laser or TXP\_MR\_10E\_C must pass successfully through the 40-WSS-C and out the 40DMX-C.
- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

**Warning**

The OSC-RX port opwrMin (dBm) Optic Thresholds setting provisioned by CTP can be set too high and generate LOS and Power Fail alarms for this port while performing an optical loopback on the OSC-CSM card. CTP provisions the opwrMin (dBm) Optic Thresholds value higher than the power received during the loopback test, because CTP calculates the thresholds based on the incoming amplified signal from an adjacent node instead of a loopbacked signal from the OSC-CSM card. To clear the alarms, reduce the Optic Thresholds setting for the opwrMin (dBm) value temporarily until the loopback test has been completed. Reset the Optic Thresholds setting to its original value after clearing the physical loopback.

**Procedure**

- Step 1** Display the terminal node in node view (single-shelf mode) or multishelf view (multishelf mode).
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms (indicated by EQPT in the Cond column) appear indicating equipment failure or other hardware problems. If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate LOS alarms on the OPT-BST, OPT-BST-E, or OPT-AMP-17-C cards, and on the OSC-CSM and OSCM cards. If OSCM cards are installed in ANSI shelves, EOC SDCC Termination Failure alarms will appear.
- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If other statuses appear, or if errors (indicated in red) appear, delete the OSC channels and complete the [NTP-G37 Running Automatic Node Setup](#) task. Provision the OSC channels when ANS is complete.
- Step 4** If no OSC terminations are present, complete the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a physical loopback on the OPT-BST, OPT-BST-E, OPT-AMP-17, or OSC-CSM card by connecting a fiber optic jumper between the LINE TX and RX ports. For OPT-BST or OPT-BST-E cards, connect a 10 dB bulk attenuator to each end of the jumper. The OSC-CSM card does not require attenuation.
- Note** For ANSI shelves, an EOC SDCC Termination Failure alarm will appear due to the OSC signal loopback. This is observed as an alarm on Port 1 of the OSCM or OSC-CSM card.
- Step 6** Provision OSC terminations. Complete the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 7** Wait approximately two minutes, then verify that the OSC link is active on the Side A OSCM or OSC-CSM card by observing whether or not the LOS alarm on the OSCM or OSC-CSM (and the OPT-BST or OPT-BST-E card, if present) clears. (The OSC termination must already be provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Note** If the LOS alarm does not clear on the OSC-CSM card, verify that the opwrMin (dBm) Optic Thresholds setting for the OSC-RX port is not higher than the port's Optical Line power value. In the OSC-CSM card view, click the **Provisioning > Optical Line > Optic Thresholds** tabs and record the opwrMin (dBm) setting and compare it to the value found in the Power column for the OSC-RX port in the **Provisioning > Optical Line > Parameters** tabs. Reduce the Optic Thresholds setting for the opwrMin (dBm) value temporarily until the loopback test has been completed to clear the LOS alarm. Reset the Optic Thresholds setting to its original value after clearing the physical loopback.
- Step 8** If you are using a tunable laser, follow the manufacturer's instructions to complete the following substeps. If you are using a TXP\_MR\_10E\_C card, continue with step 9.
- Set the output power to a nominal value, such as -3 dBm.

b) Set the tuner to the wavelength you will test, then continue with step 10.

- Step 9** If you are using a TXP\_MR\_10E\_C card, complete the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task for the TXP containing the wavelength you will test. Refer to [Table 1](#), if needed.
- Step 10** Using the available patch panel, connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the correct CHAN RX port on the 40-WSS-C card for the wavelength that you want to test. Refer to [Table 4-1](#) on page 4-28, if needed. For example, if the tested wavelength is 1530.33 nm (shown as 1530.3), then connect the TXP\_MR\_10E\_C card DWDM TX port to the Optical Connector 1, CHAN RX 01 port on the 40-WSS-C card.
- Note** The tunable laser minimum Pout must be  $-6$  dBm. If the output power is lower than  $-6$  dBm, the 40-WSS-C card might not reach the provisioned set point.
- Step 11** Display the 40-WSS-C card in card view.
- Step 12** Click the **Provisioning** > **Optical Chn Optical Connector $n$**  > **Parameters** tabs, where  $n$  = the optical connector number that carries the wavelengths you will test. Refer to [Table 1](#), if needed.
- Step 13** Click the **Admin State** table cell for the add (CHAN-RX) port carrying the tested wavelength, then choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the drop-down list. For example, if the tested wavelength is 1530.33 nm (shown as 1530.3), you would click the Port 1 (CHAN-RX) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list.
- Step 14** Change the administrative state of the pass-through port corresponding to the port in step 10 to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI). For example, if the tested wavelength is 1530.33 nm (shown as 1530.3), you would click the Port 41 (PASS-THROUGH) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list. Refer to [Table 1](#), if needed.
- Step 15** Click **Apply**, then click **Yes**.
- Step 16** Click the **Maintenance** tab.
- Step 17** For Channel #1, change Operating Mode to **Add Drop**.
- Step 18** Click **Apply**, then click **Yes**.
- Step 19** Click the **Provisioning** > **Optical Chn Optical Connector $n$**  > **Parameters** tabs, where  $n$  = the optical connector number that carries the wavelength under test.
- Step 20** Verify that the actual power coming from the tunable laser or TXP\_MR\_10E\_C card shown under the Power column is equal to the specified VOA Power Ref power ( $\pm 0.2$  dB) shown in the same row.
- Step 21** Click the **Optical Line** tab.
- Step 22** Verify that the Port 83 (COM-TX) Power column value is the same as the VOA Power Ref set point in [Step 20](#) ( $\pm 0.5$  dB). This verifies that the optical signal is traveling correctly through the 40-WSS-C card.
- Step 23** If an OPT-BST, OPT-BST-E, or OPT-BST-L card is installed, complete the [DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#) on the OPT-BST or OPT-BST-E to ensure that the amplifier is working properly. If an OSC-CSM is installed, complete the [“DLP-G84 Verifying the OSC-CSM Incoming Power”](#) task.
- Step 24** If an OSC-CSM is installed, continue with [Step 26](#). If an OPT-BST is installed, verify the connection between Port 83 (COM-TX) on the 40-WSS-C and Port 1 (COM-RX) on the OPT-BST or OPT-BST-E cards:
- Display the 40-WSS-C card in card view.
  - Click the **Provisioning** > **Optical Line** tabs.
  - Record the value in the Power column for Port 83 (COM-TX).
  - Display the OPT-BST or OPT-BST-E card in card view.
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs.
  - Verify that the value in the Power column for Port 1 (COM-RX) is equal to the value recorded in step c,  $\pm 1.0$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between

the OPT-BST or OPT-BST-E card and the 40-WSS-C cards. Check the values again. If they still do not match, contact your next level of support.

- Step 25** If an OPT-BST, OPT-BST-E, or OPT-BST-L card is installed on the Side A or terminal side, complete the [DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#) to ensure that the amplifier is working properly. Continue with step 28.
- Step 26** Complete the following steps to verify the connection between Port 83 (COM-TX) on the 40-WSS-C and the Port 2 (COM-RX) on the OSC-CSM card:
- Display the 40-WSS-C card in card view.
  - Click the **Provisioning > Optical Line** tabs.
  - Record the value in Power table cell for Port 83 (COM-TX).
  - Display the OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Verify that the value in the Power table cell for Port 2 (COM-RX) is equal to the value recorded in Step c, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the OSC-CSM and 40-WSS-C cards. Check the values again. If they still do not match, contact your next level of support.
- Step 27** Complete the following steps to verify the connection between Port 2 (COM-TX) on the OPT-PRE card and Port 41 (COM-RX) on the 40-DMX-C card:
- Display the OPT-PRE card in card view.
  - Click the **Provisioning > OptAmpliLine > Parameters** tabs.
  - Record the total output power in Power column for Port 2 (COM-TX).
  - Display the 40-DMX-C card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Verify that the value in the Power column for Port 41 (COM-RX) is equal to the value recorded in Step c, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the OPT-PRE and 40-DMX-C cards. Check the values again. If they still do not match, contact your next level of support.
- Step 28** If an OPT-PRE card is installed on the Side A or terminal side, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task on the OPT-PRE card to ensure that the amplifier is working properly. If OSC-CSM cards are installed, complete the “[DLP-G84 Verifying the OSC-CSM Incoming Power](#)” task.
- Step 29** Complete the [DLP-G270 Verifying the 32DMX or 40-DMX-C Power](#) to verify that the 40-DMX-C card is powered correctly.
- Step 30** Display the 40-WSS-C card in card view.
- Step 31** Click the **Maintenance** tab.
- Step 32** For the circuit (channel) under test, click the **Operating Mode** table cell and choose **Not Assigned** from the drop-down list.
- Step 33** Click **Apply**, then click **Yes**.
- Step 34** Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelength under test.
- Step 35** Click the **Admin State** table cell. Choose **IS,AINS** (ANSI) or **Unlocked,automaticInService** (ETSI) from the drop-down list for all ports that were changed to OOS,MT or Locked,maintenance in steps 12 and 13 of this procedure. For example, if the tested wavelength is 1430-33 nm (shown as 1530.3), you would click the

Admin State field and choose IS,ANSI (ANSI) or Unlocked,AutomaticInService (ETSI) from the drop-down list for both Port 1 (CHAN-RX) and Port 41 (PASS-THROUGH).

- Step 36** Repeat steps 8 through 35 for the remaining 39 wavelengths of the 100-GHz grid to verify the correct behavior of all VOAs inside the 40-WSS-C card.
- Step 37** Disconnect the TXP card or tunable laser from the 40-WSS-C card.
- Step 38** Remove the loopback created in [Step 5](#).
- Step 39** Complete the [NTP-G37 Running Automatic Node Setup](#) to restore the original configuration.
- Step 40** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer to *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

**Stop. You have completed this procedure.**

## NTP-G43 Performing the ROADM Node with 32WSS and 32DMX Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This acceptance test verifies that a ROADM node provisioned for C-band wavelengths is operating properly before you connect it to the network. The test verifies the operation of the amplifiers and also verifies that each add/drop and pass-through port on the 32WSS and 32DMX cards operates properly. The test also checks the power levels at each transmit and receive port to ensure that power loss in the cabling is within tolerance. If MMU cards are installed, the test verifies that the MMU insertion loss does not impact add, drop, or pass through circuits. |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                                                                                                                                                                                         |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                |                |
|----------------|----------------|
| Security Level | Superuser only |
|----------------|----------------|

**Note**

- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter they can be used for this procedure. No additional cabling changes are needed.
- Because the node is isolated and no line-side fibers are connected during the test, the power levels going into the line-side cards will not be the same as the levels after the node is connected to the network. Therefore, if the ROADM shelf does not contain either OPT-BST or OPT-BST-E amplifiers, and OPT-PRE amplifiers on both Side B and Side A, lower the OPT-PRE power thresholds so that it turns on properly. At the end of the test, you will run ANS to configure the node with the correct parameters for the network acceptance test.
- Throughout this procedure, Side A refers to Slots 1 through 8, and Side B refers to Slots 10 through 17.

**Procedure**

- Step 1** Display the ROADM node in node view (single-shelf mode) or multishelf view (multishelf mode).
- Step 2** Import the Xml file to fully configure node: layout, patchcords, parameters. See the [NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File](#) as necessary.
- Step 3** Install the cards and fiber up the node according with the xml file settings.
- Step 4** Run the ANS at node level and verify no errors are present. See [NTP-G37 Running Automatic Node Setup](#) task as necessary. In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Port Status** tabs. Verify that all statuses under Link Status are either **Success - Changed**, or **Success - Unchanged**. If any are not, complete the following step: [NTP-G37 Running Automatic Node Setup](#) task.
- Step 5** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task chapter.
- Step 6** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* task
- Note** The OSC terminations created during node turn-up will generate two alarms for each side of the shelf: one an LOS alarm on the OPT-BST or OPT-BST-E card, and the other an LOS alarm on the OSC-CSM or OSCM card. If OSCM cards are installed in ANSI shelves, EOC DCC Termination Failure alarms will appear.

- Step 7** Complete the [DLP-G310 Verifying ROADM Node C-Band Pass-Through Channels with 32WSS and 40-WSS-C Cards](#) task.
- Step 8** Complete the [DLP-G311 Verifying the Side A or Side B ROADM C-Band Add/Drop Channels with 32WSS and 40-WSS-C Cards](#) tasks for channels that will be added or dropped on the node.
- Step 9** Delete both OSC channels using the “[DLP-G186 Delete an OSC Termination](#)” task.
- Step 10** Complete the [NTP-G37 Running Automatic Node Setup](#) task.
- Step 11** Create the two OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 12** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the “[DLP-G128 Disable Alarm Filtering](#)” task as necessary.
  - Verify that no equipment failure alarms appear on the node. If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* task.
- Stop. You have completed this procedure.**

## DLP-G310 Verifying ROADM Node C-Band Pass-Through Channels with 32WSS and 40-WSS-C Cards

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task verifies the signal flow through a ROADM node for C-band pass-through channels. Pass-through channels pass through both the 32WSS or both 40-WSS-C cards. The channels pass through the first 32WSS or 40-WSS-C from the COM-RX port to the EXP-TX port. In the second 32WSS or 40-WSS-C, the channel goes from the EXP-RX port to the COM-TX port. The channel is not terminated inside the node. If MMU cards are installed, the channel passes through the MMU COM-RX and EXP-TX ports to the 32WSS or the 40-WSS-C COM-RX and EXP-TX ports on one side. On the other side, the channel goes from the 32WSS or 40-WSS-C EXP-RX and COM-TX ports to the MMU EXP-RX and COM-TX ports. |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">NTP-G38 Provisioning OSC Terminations</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                |                |
|----------------|----------------|
| Security Level | Superuser only |
|----------------|----------------|



**Note** Throughout this task, Side A refers to Slots 1 through 8, and Side B refers to Slots 10 through 17.

## Procedure

- Step 1** Create a physical loopback on the Side A OPT-BST, OPT-BST-E, or OSC-CSM card by connecting the LINE TX port to its LINE RX port. For OPT-BST or OPT-BST-E cards, connect a 10-dB bulk attenuator to the fiber. (OSC-CSM cards do not require attenuation.)
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 2** If an OPT-PRE amplifier or OSC-CSM card is installed on Side A (where the physical loopback was created), perform the following steps. If not, continue with step 3.
- Display the OPT-PRE card in card view, then click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - In the Types area, click **Alarm**, then click **Refresh**. The alarm thresholds for the OPT-PRE card will appear.
  - Double-click the **Power Failure Low** table cell for Port 1 (COM-RX) and delete the current value.
  - Type a new value of **-30.0** and press the **Enter** key.
  - In the CTC window, click **Apply**, then click **Yes** in the confirmation dialog box.
- Step 3** If an OPT-PRE or OSC-CSM card is installed on Side B, complete the following steps. If not, continue with step 4.
- Display the Side B OPT-PRE card in card view, then click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - In the Types area, click **Alarm**, then click **Refresh**. The alarm thresholds for the OPT-PRE card will appear.
  - Double-click the **Power Failure Low** table cell for Port 1 (COM-RX) and delete the current value.
  - Type a new value of **-30.0** and press the **Enter** key.
  - In the CTC window, click **Apply**, then click **Yes** in the confirmation dialog box.
- Step 4** Wait 2 to 3 minutes, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the Side A OSCM or OSC-CSM card and the OPT-BST or OPT-BST-E card have cleared. The clearing of the LOS alarms indicates that the OSC link is active on Side A. If the alarms do not clear, contact your next level of support.
- Note** For ANSI shelves, an EOC SDCC Termination Failure alarm will continue to appear due to the OSC signal loopback.
- Step 5** Create an OCH-DCN circuit for channel 1 on side A related to EXP path. The circuit is bidirectional and goes from LINE-RX port of the OPT-BST (or OSC-CSM) side B to the LINE-TX port of the OPT-BST (or OSC-CSM) on the opposite side A.
- Step 6** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card TRUNK-TX port to the Side B OPT-BST, OPT-BST-E, or OSC-CSM LINE RX port. If a Side B OPT-PRE is installed, insert a 10-dB attenuator on the fiber coming from the TXP\_MR\_10E\_C card.
- Caution** Failure to use proper attenuation might damage the equipment.

- Step 7** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with step 8.
- Set the output power to a nominal value, such as  $-3$  dBm.
  - Set the tuner to the wavelength you will test, then continue with step 9.
- Step 8** If you are using a TXP\_MR\_10E\_C card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the TXP transmitting the wavelength you will test.
- Step 9** If an OPT-PRE card is installed on Side B, complete the following steps. If not, continue with step 10.
- Display the Side B OPT-PRE in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Power parameter for Port 1 (COM-RX). Record the value.
  - Display the Side B OPT-BST, OPT-BST-E, or OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Power value for Port 2 (COM-TX) (OPT-BST or OPT-BST-E) or Port 3 (COM-TX) (OSC-CSM). Verify that the value matches the power recorded in Step c,  $\pm 2.0$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the OPT-PRE card and the OPT-BST, OPT-BST-E, or OSC-CSM card. Check the values again. If they still do not match, contact your next level of support.
  - For the Side B OPT-PRE card, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task.
- Step 10** If an MMU card is installed on Side B, complete the following steps, then continue with step 12. If an MMU card is not installed, continue with step 11.
- Display the Side B MMU card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Port 3 (COM-RX) power parameter. Record the value.
  - If a Side B OPT-PRE card is installed, display it in card view and complete Step e. If not, continue with Step f.
  - Click the OPT-PRE **Provisioning > Opt.Ampli.Line > Parameters** tabs and read the Total Output Power value for Port 2 (COM-TX), then continue with Step i.
  - If a Side B OPT-BST or OPT-BST-E card is installed, display it in card view and complete Step g. If not, continue with Step h.
  - Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-TX), then continue with Step i.
  - Display the Side B OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 3 (COM-TX), then continue with Step i.
  - Verify that value in the Step e, g or h matches the power recorded in Step c,  $\pm 1.0$  dB. If not, [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the MMU card and the OPT-BST, OPT-BST-E, OPT-PRE, or OSC-CSM cards. Check the values again. If they still do not match, contact your next level of support.
  - Display the Side B MMU card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Record the value in the Power table cell for Port 2 (EXP-TX) of the Side B MMU card.
  - Display the Side B 32WSS or 40-WSS-C card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Verify that the value in the Power table cell for Port 68 (COM-RX) is equal to the value recorded in Step l,  $\pm 1.0$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the 40-WSS-C and MMU cards. Check the values again. If they still do not match, contact your next level of support.

p) Continue with step 12.

- Step 11** Verify the Side B 32WSS or 40-WSS-C card to OPT-BST, OPT-PRE, or OSC-CSM card cable connection:
- Display the Side B 32WSS or 40-WSS-C in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Port 68 (COM-RX) (for 32WSS card) or Port 84 (COM-RX) (for 40-WSS-C card) Power parameter. Record the value.
  - If a Side B OPT-PRE card is installed, display it in card view and complete Step e. If not, continue with Step f.
  - Click the **Provisioning > Opt.Ampli.Line > Parameters** tabs and read the Total Output Power value for Port 2 (COM-TX), then continue with Step i.
  - If an OPT-BST or OPT-BST-E card is installed on Side B, display it in card view and complete Step g. If not, continue with Step g.
  - Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-TX), then continue with Step i.
  - Display the Side B OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 3 (COM-TX), then continue with Step i.
  - Verify that the value in Step e, g, or h matches the power recorded in Step c,  $\pm 1.5$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the 32WSS or 40-WSS-C card and the OPT-PRE, OPT-BST, OPT-BST-E, or OSC-CSM card. Check the values again. If they still do not match, contact your next level of support.
- Step 12** Verify the EXPRESS cable connection between the two 32WSS or two 40-WSS-C cards:
- Display the Side B 32WSS or 40-WSS-C in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Port 65 (EXP-TX) (for 32WSS card) or Port 81 (EXP-TX) (for 40-WSS-C card) Power parameter. Record the value.
  - Display the Side A 32WSS or 40-WSS-C in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Locate the Power value for EXPRESS Port 66 (EXP-RX) (for 32WSS card) or Port 82 (EXP-RX) (for 40-WSS-C card). Verify that the value matches the power recorded in Step c,  $\pm 1$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the 32WSS or 40-WSS-C cards. Check the values again. If they still do not match, contact your next level of support.
- Step 13** Display the Side A 32WSS or 40-WSS-C card in card view. Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the connector number containing the wavelength you are testing. Refer to [Table 1: 40-WSS-C Ports and Wavelengths Test Checklist](#), if needed. Wait 60 to 70 seconds (or click **Reset**), then locate the Power and VOA Power Ref parameters for the tested PASS-THROUGH port. Verify that the Power value is equal to the VOA Power Ref value,  $\pm 1.5$  dBm. If the Power value is not equal to the VOA Power Ref value  $\pm 1.5$  dBm, contact your next level of support.
- Step 14** If an MMU card is installed on Side A, complete the following steps. If an MMU card is not installed on Side A, continue with step 15.
- Display the Side A 32WSS or 40-WSS-C card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Record the value in the Power table cell for Port 67 (COM-TX) (for 32WSS card) or Port 83 (COM-TX) (for 40-WSS-C card).
  - Display the Side A MMU card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.

- f) Verify that the value in the Power table cell for Port 1 (EXP-RX) is equal to the value recorded in Step c, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the 32WSS or 40-WSS-C and MMU cards. Check the values again. If they still do not match, contact your next level of support.
- g) Record the value in the Power table cell for Port 4 (COM-TX).
- h) If a Side A OPT-BST or OPT-BST-E card is installed, display it in card view and complete Step i. If not, continue with Step j.
- i) Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 1 (COM-RX), then continue with Step k.
- j) Display the Side A OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-RX), then continue with Step k.
- k) Verify that the value in Step i or j matches the power recorded in Step g, +/- 1.5 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the OPT-BST, OPT-BST-E, or OSC-CSM card and the MMU cards. Check the values again. If they still do not match, contact your next level of support.
- l) Continue with step 18.

**Step 15** For OPT-BST, OPT-BST-E, or OSC-CSM card is installed on Side A, complete the following steps.

- a) Display the Side A OPT-BST, OPT-BST-E, or OSC-CSM in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Locate the Port 1 (COM-RX) Power parameter (OPT-BST or OPT-BST-E cards) or the Port 2 (COM-RX) Power parameter (OSC-CSM cards). Record the value.
- d) Display the Side A 32WSS or 40-WSS-C in card view.
- e) Click the **Provisioning > Optical Line > Parameters** tabs.
- f) Locate the Power value for Port 67 (COM-TX) (for 32WSS card) or Port 83 (COM-TX) (for 40-WSS-C card). Verify that the value matches the power recorded in Step c, +/-1 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) to clean the fiber connection between the OPT-BST, OPT-BST-E, or OSC-CSM card and the 40-WSS-C card. Check the values again. If they still do not match, contact your next level of support.

**Step 16** If on Side A an OPT-BST or OPT-BST-E card is installed, complete the [DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#) task. If instead an OSC-CSM is installed, no action is needed.

**Step 17** Repeat steps from 9 to 16 for the same wavelength running on opposite direction (side A-> side B).

**Step 18** Complete step 13 for the additional wavelengths that you want to test. If you have tested all the wavelengths, continue with step 19.

**Step 19** Delete the OCH-DCN circuit created on step 5.

**Step 20** If you used a tunable laser or an installed TXP\_MR\_10E\_C card for this test, disconnect it from the Side A OPT-BST, OPT-BST-E, or OSC-CSM line side RX ports.

**Step 21** Remove the loopback fiber from the line RX and TX in the Side A OPT-BST, OPT-BST-E, or OSC-CSM card.

**Step 22** Return to your originating procedure (NTP).

---

## DLP-G311 Verifying the Side A or Side B ROADM C-Band Add/Drop Channels with 32WSS and 40-WSS-C Cards

|                                |                                                                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task verifies the signal flow through Side A or Side B of a ROADM node for C-band add/drop channels.                                                                                                                |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a>                                                                                                                                                                                     |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                   |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                           |



### Note

- Throughout this task Side X refers to side you want to test (Side A or Side B) and Side Y refers to the opposite side.

Throughout this task, Side A refers to Slots 1 through 8, and Side B refers to Slots 10 through 17.

### Procedure

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), display the Alarms tab.
- Step 2** Create a physical loopback on the Side X OPT-BST, OPT-BST-E, or OSC-CSM card by connecting the LINE TX port to its LINE RX port. For OPT-BST or OPT-BST-E cards, connect a 10-dB bulk attenuator to the fiber. (OSC-CSM cards do not require attenuation.)
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 3** Wait 2 to 3 minutes, then click the **Alarms** tab. Verify that the LOS alarms on the Side X OSCM or OSC-CSM card and the OPT-BST or OPT-BST-E card have cleared. The clearing of the LOS alarms indicates that the OSC link is active on Side X.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback.
- Step 4** Create an OCH-DCN circuit for channel 1 on Side X related to ADD/DROP path. The circuit is bidirectional and goes from CHAN-RX port (Add) of the 32WSS or 40-WSS-C Side X to the LINE-TX port of the OPT-BST

(or OSC-CSM) on the same side and backward from LINE-RX port of the OPT-BST (or OSC-CSM) on Side Y to the CHAN-TX port (Drop) of the 32DMX or 40-WSS-C card belonging to Side X.

- Step 5** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with .
- Set the output power to a nominal value, such as  $-3$  dBm.
  - Set the tuner to the wavelength you are testing, then continue with step 8.
- Step 6** If you are using a TXP\_MR\_10E\_C card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the TXP transmitting the wavelength you will test. Refer to the table 42 10G Data Muxponder Card Settings in "Provision Transponder and Muxponder Cards" chapter, if needed.
- Step 7** If you are using a TXP\_MR\_10E\_C card, complete the following steps. If you are using a tunable laser continue with step 8.
- Display the TXP\_MR\_10E\_C in card view.
  - Click the **Performance > Optics PM > Current Values** tabs.
  - Locate the Port 2 (Trunk) table cell for the TX Optical Pwr parameter. Record the value.
- Step 8** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the Side X fiber patch panel MUX port that is connected to the Side X 32WSS or 40-WSS-C card CHAN RX port carrying the tested wavelength. (If the TXP\_MR\_10E\_C card was installed during [Turn Up a Node](#) chapter, simply verify the cable connection.)
- Step 9** Connect the TXP\_MR\_10E\_C DWDM RX port or the power meter RX port to the Side X fiber patch panel DMX port that is connected with the Side X 32DMX or 40-DMX-C card CHAN-TX port carrying the tested wavelength. (If the TXP\_MR\_10E\_C card was installed during [Turn Up a Node](#) chapter, simply verify the cable connection.)
- Step 10** Click the **Provisioning > Optical Chn Optical Connectorn > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelengths you will test. Refer to table 42 10G Data Muxponder Card Settings in "Provision Transponder and Muxponder Cards" chapter, if needed.
- Step 11** Find the tested wavelength CHAN RX port, then scroll to the right until you see the Power Add parameter. Verify that the Power Add value for the tested port CHAN RX is equal to the output power level of the tunable laser or the TXP\_MR\_10E\_C card measured in step 7,  $\pm 1.0$  dBm.
- Step 12** Click the **Provisioning > Optical Line > Parameters** tabs and record the value in the Power table cell for Port 67 (COM-TX) for the wavelength under test.
- Step 13** Verify that the power value from step 12 reaches the Shelf  $i$  Slot  $i$  (32WSS or 40-WSS-C).Port COM-TX. Power set point  $\pm 1.0$  dBm on Side X. To view this set point:
- In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.
  - In the Selector window on the left, expand the 32WSS or 40-WSS-C card on Side X.
  - Expand the Port COM-TX category.
  - Select **Power**.
  - $i$  View the value of the Shelf  $i$  Slot  $i$  (32WSS or 40-WSS-C).Port COM-TX. Power parameter on the right pane.
  - If the power value does not match the value recorded in step 12 ( $\pm 2.0$  dBm), contact your next level of support.
- Step 14** If an MMU card is installed on Side X, complete the following steps. If an MMU card is not installed on Side X, continue with step 15.
- Display the Side X 32WSS or 40-WSS-C card in card view.

- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Record the value in the Power table cell for Port 67 (COM-TX).
- d) Display the Side X MMU card in card view.
- e) Click the **Provisioning > Optical Line > Parameters** tabs.
- f) Verify that the value in the Power table cell for Port 1 (EXP-RX) is equal to the value recorded in Step c, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the 32WSS or 40-WSS-C and MMU cards. Check the values again. If they still do not match, contact your next level of support.
- g) Record the value in the Power table cell for Port 4 (COM-TX).
- h) If a Side X OPT-BST or OPT-BST-E card is installed, display it in card view and complete Step i. If not, continue with Step j.
- i) Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 1 (COM-RX), then continue with Step k.
- j) Display the Side X OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-RX), then continue with Step k.
- k) Verify that the value in Step i or j matches the power recorded in Step g, +/- 1.5 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the OPT-BST, OPT-BST-E, or OSC-CSM card and the MMU cards. Check the values again. If they still do not match, contact your next level of support.
- l) Continue with step 16.

**Step 15** Verify the connection between the 32WSS or 40-WSS-C card and the OPT-BST, OPT-BST-E or OSC-CSM cards:

- a) Display the Side X 32WSS or 40-WSS-C card in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Record the value in the Power table cell for Port 67 (COM-TX).
- d) If a OPT-BST or OPT-BST-E card is installed on Side X, display it in card view and complete Step e. If not, continue with Step f.
- e) Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 1 (COM-RX), then continue with Step g.
- f) Display the Side X OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-RX), then continue with Step g.
- g) Verify that the value in Step e or f matches the power recorded in Step c, +/- 1.0 dB. If so, continue with step 16. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the OPT-BST, OPT-BST-E, or OSC-CSM card and the 32WSS or 40-WSS-C cards. Check the values again. If they still do not match, contact your next level of support.

**Step 16** If an OPT-PRE card is installed on Side X, complete the following steps. If not, continue with step 17.

- a) Display the Side X OPT-PRE in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Locate the Power parameter for Port 1 (COM-RX). Record the value.
- d) Display the Side X OPT-BST, OPT-BST-E, or OSC-CSM card in card view.
- e) Click the **Provisioning > Optical Line > Parameters** tabs.
- f) Locate the Port 2 (COM-TX) Power value (for OPT-BST or OPT-BST-E cards) or Port 3 (COM-TX) Power value (for OSC-CSM cards). Verify that the value matches the power recorded in Step c, +/- 1.5 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the OPT-PRE card and the OPT-BST, OPT-BST-E, or OSC-CSM card. Check the values again. If they still do not match, contact your next level of support.

- g) For the Side X OPT-PRE card, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task.

**Step 17** If an MMU card is installed on Side X, complete the following steps. If an MMU card is not installed on Side X, continue with [Step 18](#).

- a) Display the Side X MMU card in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Locate the Port 68 (COM-RX) Power parameter. Record the value.
- d) If an OPT-PRE card is installed on Side X, display it in card view and complete Step e. If not, continue with Step f.
- e) Click the OPT-PRE **Provisioning > Opt.Ampli.Line > Parameters** tabs. Record the Total Output Power value for Port 2 (COM-TX), then continue with Step j.
- f) If a Side X OPT-BST or OPT-BST-E card is installed, display it in card view and complete Step g. If not, continue with Step h.
- g) Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-TX), then continue with Step j.
- h) Display a Side X OSC-CSM card in card view, click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 3 (COM-TX), then continue with Step i.
- i) Verify that value in the Step e, g, or h matches the power recorded in Step c, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the MMU card and the OPT-BST, OPT-BST-E, or OSC-CSM cards. Check the values again. If they still do not match, contact your next level of support.
- j) Display the Side X MMU card in card view.
- k) Click the **Provisioning > Optical Line > Parameters** tabs.
- l) Record the value in the Power table cell for Port 2 (EXP-TX).
- m) Display the Side X 32WSS or 40-WSS-C card in card view.
- n) Click the **Provisioning > Optical Line > Parameters** tabs.
- o) Verify that the value in the Power table cell for Port 68 (COM-RX) is equal to the value recorded in Step l, +/- 1.0 dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the 32WSS or 40-WSS-C and MMU cards. Check the values again. If they still do not match, contact your next level of support.
- p) Continue with 19.

**Step 18** Verify the connection between the Side X 32WSS or 40-WSS-C card and the OPT-BST, OPT-BST-E, OPT-PRE, or OSC-CSM card:

- a) Display the Side X 32WSS or 40-WSS-C card in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs.
- c) Locate the Port 68 (COM-RX) Power parameter. Record the value.
- d) If a Side X OPT-PRE card is installed, display it in card view and complete Step e. If not, continue with Step f.
- e) Click the **Provisioning > Opt.Ampli.Line > Parameters** tabs and read the Total Output Power value for Port 2 (COM-TX), then continue with Step i.
- f) If a Side X OPT-BST or OPT-BST-E card is installed, display it in card view and complete Step g. If not, continue with Step h.
- g) Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 2 (COM-TX), then continue with Step i.
- h) Display the Side X OSC-CSM card in card view. Click the **Provisioning > Optical Line > Parameters** tabs and read the Power value for Port 3 (COM-TX), then continue with Step i.

- i) Verify that the value in Step e, g, or h matches the power recorded in Step c,  $\pm 1.5$  dB. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the 32WSS or 40-WSS-C card and the OPT-PRE, OPT-BST, or OSC-CSM card.

**Step 19** Verify the Side X 32WSS or 40-WSS-C and 32DMX or 40-DMX-C connection:

- a) Display the Side X 32WSS or 40-WSS-C card in card view.
- b) Click the **Provisioning > Optical Line > Parameters** tabs and record the value in the Power table cell for Port 69 (DROP-TX).
- c) Display the Side X 32DMX or 40-DMX-C card in card view.
- d) Click the **Provisioning > Optical Line > Parameters** tabs. Record the value in the Port 2 for Side A and Port 33 for Side B for a 32DMX or 40-DMX-C card.
- e) (COM-RX) table cell. Verify that the value is equal to the value recorded in b,  $\pm 1.0$  dBm. If not, use the [NTP-L22 Cleaning Fiber Connectors](#) task to clean the fiber connection between the 32WSS and 32DMX cards. Check the values again. If they still do not match, contact your next level of support.

**Step 20** Display the Side X 32DMX or 40-DMX-C card in card view.

**Step 21** Click the **Provisioning > Optical Chn > Parameters** tab. Record the CHAN-TX port value under the Power parameter for the wavelength under test.

**Step 22** Verify that the power value from step 21 reaches the Shelf *i* Slot *i* (32DMX or 40-DMX-C).Port CHAN-TX.Power set point  $\pm 2$  dBm on Side X. To view this set point:

- a) Go to node view (single-shelf mode) or multishelf view (multishelf mode) and click the **Provisioning > WDM-ANS > Provisioning** tabs.
- b) In the Selector window on the left, expand the 32DMX or 40-DMX-C card on Side X.
- c) Expand the Port CHAN-TX category.
- d) Select **Power**.
- e) View the value of the Shelf *i* Slot *i* (32DMX or 40-DMX-C).Port CHAN-TX.Power parameter on the right pane.
- f) If the power value does not match the value recorded in Step 21 ( $\pm 2$  dBm), contact your next level of support.

**Step 23** If you are using a TXP\_MR\_10E\_C card, display it in card view. If not, read the values called for in Step 25 from the optical test set or tunable laser you are using.

**Step 24** Click the **Performance > Optics PM > Current Values** tabs.

**Step 25** In the Port 2 (Trunk) column, locate the RX Optical Power value. Verify that the value matches the power recorded in Step 21,  $\pm 2$  dBm. If the power values do not match ( $\pm 2$  dBm), complete the following steps:

- a) Remove, clean, and replace the cable connecting the TXP\_MR\_10E\_C RX port to the Side X fiber patch panel DMX port for the tested wavelength. See the [NTP-L22 Cleaning Fiber Connectors](#) task.
- b) Repeat this step. If the power values still do not match ( $\pm 2$  dBm) contact your next level of support.

**Step 26** Repeat Steps 5 through 25 for the remaining wavelengths.

**Step 27** Delete the OCH-DCN circuit created on Step 4.

**Step 28** If you used a tunable laser or installed a TXP\_MR\_10E\_C card for this test, disconnect it from the Side X patch panel.

**Step 29** Unplug the physical loopback fiber from the line TX and RX in the OPT-BST, OPT-BST-E, or OSC-CSM card.

**Step 30** Return to your originating procedure (NTP).

## NTP-G180 Performing the ROADM Node with 40-WSS-C and 40-DMX-C Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This acceptance test verifies that a ROADM node provisioned for C-band wavelengths is operating properly before you connect it to the network. The test verifies the operation of the amplifiers and also verifies that each add/drop and pass-through port on the 40-WSS-C and 40-DMX-C cards operates properly. The test also checks the power levels at each transmit and receive port to ensure that power loss in the cabling is within tolerance. If MMU cards are installed, the test verifies that the MMU insertion loss does not impact add, drop, or pass through circuits. |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                                                                                                                                                                                               |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



### Note

- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.
- Because the node is isolated and no line-side fibers are connected during the test, the power levels going into the line-side cards will not be the same as the levels after the node is connected to the network. Therefore, if the ROADM shelf does not contain either OPT-BST or OPT-BST-E amplifiers, and OPT-PRE amplifiers on both the Side B and Side A sides, lower the OPT-PRE power thresholds so that the ROADM shelf turns on properly. At the end of the test, you will run ANS to configure the node with the correct parameters for the network acceptance test.
- Throughout this procedure, Side A refers to Slots 1 through 8, and Side B refers to Slots 10 through 17.

## Procedure

- Step 1** Make a copy of [Table 1: 40-WSS-C Ports and Wavelengths Test Checklist](#) and place it in a convenient location for reference throughout this procedure. The table shows the 40-WSS-C ports and the wavelengths assigned to them. The 40 wavelengths are divided among five physical multi-fiber push on (MPO) connectors on the 40-WSS-C card. Each MPO connector is assigned eight wavelengths. In Cisco Transport controller (CTC), the MPO connector appears in the card view Provisioning > Optical Chn:Optical Connector tab. Each Optical Connector subtab represents an MPO connector. Ports 1 through 40 are the channel (CHAN) RX (add) ports; Ports 41 through 80 are the pass-through ports.
- Step 2** Display the ROADM node in node view (single-shelf mode) or multishelf view (multishelf mode).
- Step 3** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate LOS alarms on the OPT-BST, OPT-BST-E, or OPT-AMP-C cards, and on the OSC-CSM and OSCM cards. If OSCM cards are installed in ANSI shelves, EOC SDCC Termination Failure alarms will also appear.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are either Success - Changed or Success - Unchanged. If any are not, complete the following steps:
- Delete the two OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the task.
- Note** The OSC terminations created will generate LOS alarms on the OPT-BST, OPT-BST-E, OPT-AMP-C cards and on the OSC-CSM and OSCM cards. If OSCM cards are installed in ANSI shelves, EOC DCC Termination Failure alarms will also appear.
- Step 5** If MMU cards are installed, complete the following steps. If not, continue with [Step 6](#).
- Display the Side B MMU in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Click the **Admin State** table cell for the COM RX, COM TX, EXP RX, and EXP TX ports and choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the drop-down list.
  - Click **Apply**, then click **Yes** to confirm.
  - Display the Side A MMU in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - Click the **Admin State** table cell for the COM RX, COM TX, EXP RX, and EXP TX ports and choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the drop-down list.
- Step 6** Display the Side B 40-WSS-C in card view.
- Step 7** Click the **Provisioning > Optical Chn Optical Connector $n$  > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelengths you will test. Refer to [Table 1: 40-WSS-C Ports and Wavelengths Test Checklist](#), if needed.
- Step 8** Click the **Admin State** table cell for the add port carrying the tested wavelength, then choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the drop-down list. For example, if the tested wavelength is

1530.33 nm (shown as 1530.3), you would click the Port 1 (CHAN-RX) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list.

- Step 9** Change the administrative state of the pass-through port corresponding to the port in [Step 8](#) to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI). For example, if the tested wavelength is 1530.33 nm (shown as 1530.3), you would click the Port 33 (PASS-THROUGH) Admin State field and choose OOS,MT or Locked,maintenance from the drop-down list. Refer to [Table 1: 40-WSS-C Ports and Wavelengths Test Checklist](#) , if needed.

**Table 1: 40-WSS-C Ports and Wavelengths Test Checklist**

| 40-WSS-C Provisioning Subtab        | Port #       | Wavelength | Tested: Pass-Through | Tested: Add/Drop Side A | Tested: Add/Drop Side B |
|-------------------------------------|--------------|------------|----------------------|-------------------------|-------------------------|
| Optical Chn:<br>Optical Connector 1 | RX 1, PT 41  | 1530.33    |                      |                         |                         |
|                                     | RX 2, PT 42  | 1531.12    |                      |                         |                         |
|                                     | RX 3, PT 43  | 1531.90    |                      |                         |                         |
|                                     | RX 4, PT 44  | 1532.68    |                      |                         |                         |
|                                     | RX 5, PT 45  | 1533.47    |                      |                         |                         |
|                                     | RX 6, PT 46  | 1533.47    |                      |                         |                         |
|                                     | RX 7, PT 47  | 1535.04    |                      |                         |                         |
|                                     | RX 8, PT 48  | 1535.82    |                      |                         |                         |
| Optical Chn:<br>Optical Connector 2 | RX 9, PT 49  | 1536.81    |                      |                         |                         |
|                                     | RX 10, PT 50 | 1537.40    |                      |                         |                         |
|                                     | RX 11, PT 51 | 1538.19    |                      |                         |                         |
|                                     | RX 12, PT 52 | 1538.98    |                      |                         |                         |
|                                     | RX 13, PT 53 | 1539.77    |                      |                         |                         |
|                                     | RX 14, PT 54 | 1540.56    |                      |                         |                         |
|                                     | RX 15, PT 55 | 1541.35    |                      |                         |                         |
|                                     | RX 16, PT 56 | 1542.14    |                      |                         |                         |

| <b>40-WSS-C Provisioning Subtab</b> | <b>Port #</b> | <b>Wavelength</b> | <b>Tested: Pass-Through</b> | <b>Tested: Add/Drop Side A</b> | <b>Tested: Add/Drop Side B</b> |
|-------------------------------------|---------------|-------------------|-----------------------------|--------------------------------|--------------------------------|
| Optical Chn:<br>Optical Connector 3 | RX 17, PT 57  | 1542.19           |                             |                                |                                |
|                                     | RX 18, PT 58  | 1543.73           |                             |                                |                                |
|                                     | RX 19, PT 59  | 1544.53           |                             |                                |                                |
|                                     | RX 20, PT 60  | 1545.32           |                             |                                |                                |
|                                     | RX 21, PT 61  | 1546.12           |                             |                                |                                |
|                                     | RX 22, PT 62  | 1546.92           |                             |                                |                                |
|                                     | RX 23, PT 63  | 1547.72           |                             |                                |                                |
|                                     | RX 24, PT 64  | 1548.51           |                             |                                |                                |
| Optical Chn:<br>Optical Connector 4 | RX 25, PT 65  | 1549.32           |                             |                                |                                |
|                                     | RX 26, PT 66  | 1550.12           |                             |                                |                                |
|                                     | RX 27, PT 67  | 1550.92           |                             |                                |                                |
|                                     | RX 28, PT 68  | 1551.72           |                             |                                |                                |
|                                     | RX 29, PT 69  | 1552.52           |                             |                                |                                |
|                                     | RX 30, PT 70  | 1553.33           |                             |                                |                                |
|                                     | RX 31, PT 71  | 1554.13           |                             |                                |                                |
|                                     | RX 32, PT 72  | 1554.94           |                             |                                |                                |

| 40-WSS-C Provisioning Subtab        | Port #       | Wavelength | Tested: Pass-Through | Tested: Add/Drop Side A | Tested: Add/Drop Side B |
|-------------------------------------|--------------|------------|----------------------|-------------------------|-------------------------|
| Optical Chn:<br>Optical Connector 5 | RX 33, PT 73 | 1555.75    |                      |                         |                         |
|                                     | RX 34, PT 74 | 1556.55    |                      |                         |                         |
|                                     | RX 35, PT 75 | 1557.36    |                      |                         |                         |
|                                     | RX 36, PT 76 | 1558.17    |                      |                         |                         |
|                                     | RX 37, PT 77 | 1558.98    |                      |                         |                         |
|                                     | RX 38, PT 78 | 1559.71    |                      |                         |                         |
|                                     | RX 39, PT 79 | 1560.61    |                      |                         |                         |
|                                     | RX 40, PT 80 | 1561.42    |                      |                         |                         |

**Step 10** Click **Apply**, then click **Yes** to confirm.

**Step 11** Repeat Steps 7 through 10 for each wavelength that you will test.

**Step 12** Display the Side A 40-WSS-C in card view.

**Step 13** Repeat Steps 7 through 11 for the Side A 40-WSS-C card.

**Step 14** Display the Side B 40-DMX-C card in card view and complete the following steps:

- Choose the **Provisioning > Optical Line > Parameters** tabs.
- For Port 41 (COM-RX), click the **Admin State** table cell and choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the drop-down list.
- Click **Apply**, then click **Yes** to confirm.

**Step 15** Repeat Step 14 for the Side A 40-DMX-C card.

**Step 16** Complete the [DLP-G310 Verifying ROADM Node C-Band Pass-Through Channels with 32WSS and 40-WSS-C Cards](#) task.

**Step 17** Complete the following tasks for channels that will be added or dropped on the node. [DLP-G311 Verifying the Side A or Side B ROADM C-Band Add/Drop Channels with 32WSS and 40-WSS-C Cards](#) task.

**Step 18** If MMU cards are installed, complete the following steps. If not, continue with Step 19.

- Display the Side B MMU in card view.
- Click the **Provisioning > Optical Line > Parameters** tabs.
- Click **Admin State** for the COM RX, COM TX, EXP RX, and EXP TX ports and choose **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)** from the drop-down list.
- Click **Apply**, then click **Yes** to confirm.
- Display the Side A MMU in card view.
- Click the **Provisioning > Optical Line > Parameters** tabs.

- g) Click **Admin State** for the COM RX, COM TX, EXP RX, and EXP TX ports and choose **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)** from the drop-down list.
- Step 19** Display the Side B 40-WSS-C in card view.
- Step 20** Click the **Provisioning > Optical Chn Optical Connectorn > Parameters** tabs, where  $n$  = the optical connector number that carries the wavelengths you tested.
- Step 21** Click the **Admin State** table cell then choose **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)** from the drop-down list for all ports that were changed to OOS,MT or Locked,Maintenance in Steps 8 and 9.
- Step 22** Click **Apply**.
- Step 23** Repeat Steps 20 through 22 for all the ports that are in OOS,MT or Locked,maintenance state on the Side B 40-WSS-C card.
- Step 24** Display the Side A 40-WSS-C in card view.
- Step 25** Repeat Steps 20 through 22 for all ports on the Side A 40-WSS-C card.
- Step 26** Display the Side B 40-DMX-C in card view.
- Step 27** Choose the **Provisioning > Optical Line > Parameters** tabs.
- Step 28** For Port 33, click the **Admin State** table cell and choose **IS,AINS (ANSI)** or **Unlocked,automaticInService (ETSI)** from the drop-down list.
- Step 29** Click **Apply**.
- Step 30** Display the Side A 40-DMX-C card in card view.
- Step 31** Repeat Steps 27 through 29 for the Side A 40-DMX-C card.
- Step 32** Delete both OSC channels using the “[DLP-G186 Delete an OSC Termination](#)” task.
- Step 33** Complete the [NTP-G37 Running Automatic Node Setup](#) task.
- Step 34** Create the two OSC channels using the task.
- Step 35** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the “[DLP-G128 Disable Alarm Filtering](#)” task as necessary.
  - Verify that no equipment failure alarms appear on the node. If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Stop. You have completed this procedure.**

## NTP-G276 Performing the 80-Channel n-degree ROADM Node Acceptance Tests

|                |                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b> | This procedure checks the power values and the optical connections for an 80 channel n-degree ROADM node. Use this test for both existing and new installations of 80 channel ROADM nodes. Use this procedure to also test the installation of a new side to a node. This procedure cannot be performed on the node on which the OPT-RAMP-C or OPT-RAMP-CE card is installed. |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tools/Equipment</b>         | <ul style="list-style-type: none"> <li>• Fully C-band tunable transponder or tunable laser source with an LC patchcord</li> <li>• 1 LC-LC adapter</li> <li>• 15dB optical attenuator</li> <li>• Optical power meter</li> </ul>                                                                                                                                                                                                        |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• All sides must be completely fibered (including mesh patch panels); for more information, see <a href="#">Turn Up a Node</a> chapter.</li> <li>• <a href="#">NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test</a> (optional)</li> <li>• <a href="#">NTP-G37 Running Automatic Node Setup</a></li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                        |



**Note** Identify the sides that are already carrying traffic and the sides that are going to be tested.

## Procedure

**Step 1** From the View menu, choose **Go to Network View**.

**Step 2** Click the **Alarms** tab.

- Verify that the alarm filter is not on. Complete the "[DLP-G128 Disable Alarm Filtering](#)" task as necessary.
- Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (An equipment alarm is indicated in the Alarms tab, Cond column as EQPT.) If equipment failure alarms are present, investigate and resolve them before continuing. For information on how to clear an alarm, see *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

**Step 3** Insert a full C-band tunable transponder into an available slot on the side that you want to test.

**Note** In this procedure Side A through H is referred as Side *x*.

- Step 4** Connect the TX port of the transponder to the EAD  $i$  (where  $i=1$ ) port of the 80-WXC-C card on the side to be tested.
- Step 5** Select a wavelength that is not already used by a side carrying traffic. Select 1530.33 nm for a new installation. Set the transponder wavelength to the selected wavelength  $yyyy.yy$  by completing the [DLP-G432 Setting the Transponder Wavelength](#) task.
- Step 6** Place the trunk port of the transponder in the In-Service (IS) state.
- Step 7** In node view, click the **Provisioning > WDM-ANS > Provisioning** tabs and record the Power value of the COM port of the 80-WXC-C card for the side you are verifying.
- Step 8** On Side  $x$ , go to the card view of the 80-WXC-C card and complete the following steps:
- Click the **Provisioning > WXC Line > Parameters** tabs and record the Power value of the EAD  $i$  port.
  - Click the **Maintenance > OCHNC** tabs.
    - Set the Target Power to the value recorded in step 7.
 

**Note** The target power is not set if the power value recorded in step 7 is higher than the channel power that is allocated and equalized.
    - From the Port pull-down menu, select EAD $i$  and from the Wavelength pull-down menu, select  $yyyy.yy$ 
      - Click **Refresh** and verify that the target power is reached.
      - Place the trunk port of the transponder in OutofService (OOS) state.
- Step 9** To check the wavelengths for the EAD1 port, repeat from step 5 and step 8d for the remaining 79 wavelengths.
- Note** It is not mandatory to test the 80 wavelengths for all the ports (EAD  $i$  where  $i = 1$  to 8).
- Step 10** Disconnect the transponder from EAD  $i$  port and restore the fiber connection to the EAD  $i$  port.
- Step 11** Repeat step 4 through step 10 for the remaining EAD  $i$  ports where  $i = 2$  to 8.
- Step 12** Plug a 15-dB LC attenuator into the trunk TX port of the transponder card.
- Step 13** Select a wavelength that is not already used by a side carrying traffic. Select 1530.33 nm for a new installation. Set the transponder wavelength to the selected wavelength  $yyyy.yy$  by completing the [DLP-G432 Setting the Transponder Wavelength](#).
- Step 14** Connect the optical power meter to the trunk TX port of the transponder card.
- Step 15** Complete the [DLP-G433 Recording Transponder Optical Power](#) task.
- Step 16** Disconnect the optical power meter from the TX port of the transponder card.
- Step 17** In card view, display the OPT-AMP-C card configured as LINE for Side  $x$  (slot 1 or 17) and complete the following steps:
- Click the **Maintenance > ALS** tabs and from the OSRI pull-down menu, select **OFF**.
  - Connect the optical power meter to the LINE-TX port of the booster amplifier (OPT-AMP-C configured as LINE in slot 1 or 17) on Side  $x$ .
  - From the ALS Mode pull-down menu, select **Disable**.
- Step 18** Make the following connections:
- Connect the transponder output port (with the 15-dB attenuator) to the Line RX port of the booster amplifier (OPT-AMP-C configured as LINE in slot 1 or 17) on Side  $x$ .
  - Connect the optical power meter to the LINE-TX port of the booster amplifier (OPT-AMP-C configured as LINE in slot 1 or 17) on Side  $x$ .

- c) Use a fiber jumper to connect the DROP-TX port to the AD port of the 80-WXC-C card for Side *x*.
- Step 19** Create an OCHNC DCN circuit for wavelength *yyyy.yy* from LINE amplifier of Side *x* to local add/drop ports of the 80-WXC-C card of Side *x* using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task and wait till all the alarms clear.
- Step 20** In card view, display the booster amplifier card for Side *x*. Click the **Inventory** > **Info** tabs and record the IL02 (LINE RX->COM TX) insertion loss value.
- Step 21** In card view, display the transponder card and click the **Provisioning** > **Line** tabs. For the trunk port, choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the Admin State drop-down list and click **Apply**.
- Step 22** In card view, display the booster amplifier card for Side *x*, and complete the following steps:
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-TX port.
  - Verify the power value of the COM-TX port = (Optical power meter value in step 15) – (LINE RX->COM TX insertion loss value read in step 20) (+/- 1 dB).
- Step 23** In card view, display the preamplifier card (OPT-AMP-C configured as PRE in slot 2 or 16) for Side *x* and complete the following steps:
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the COM-RX power value matches the value in step 22 b (+/- 1 dB).
  - Click the **Provisioning** > **Opt. Ampli. Line** > **Parameters** tabs and record the Total Output Power value of the LINE-TX port.
- Step 24** In card view, display the 80-WXC-C card for Side *x* and complete the following steps:
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the value matches the LINE-TX port power value in step 23c (+/- 1dB).
  - Click the **Inventory** > **Info** tabs and record the COM-RX -> EXP-TX insertion loss.
  - Record the COM-RX -> DROP-TX insertion loss.
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the EXP-TX port.
  - Record the Power value of the DROP-TX port.
  - Verify that the EXP-TX Power value in step 24e = (COM-RX value in step 24a) – (COM-RX -> EXP-TX value in step 24c) (+/- 1 dB).
  - Click the **Provisioning** > **WXC Line** > **Parameters** tabs and record the Power value of the AD port.
  - Verify that the value matches the DROP-TX port power value in step 24f (+/- 1dB).
  - Click the **Provisioning** > **WXC Line** > **Parameters** tabs and record the Power value of the COM port.
  - Verify that the power value in step 24j matches the COM port power value in the node view **Provisioning** > **WDM-ANS** > **Provisioning** tabs for the 80-WXC-C card under test.
- Step 25** In card view, display the 80-WXC-C card for a side different from Side *x* and complete the following steps: This step must be performed for a single wavelength *yyyy.yy* only that is not used on any of the installed sides.
- Click the **Maintenance** > **Wavelength Power** tabs and select PORT EAD *i*, where *i* depends on the value of *x*. (*x, i*) = (A,1) (B,2) (C,3) (D,4) (E,5) (F,6) (G,7) (H,8)
  - Record the power value for wavelength *yyyy.yy*.
  - Verify if the power value in step 25b is equal to the (power value recorded in step 24e - 8dB) if a PP-MESH-4 is used or is equal to the (power value recorded in step 24e - 12dB) if a PP-MESH-8 is used.
- Step 26** In card view, display the booster amplifier card for Side *x*, and complete the following:

- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - b) Verify COM-RX Power value matches the COM Power value in step 24j (+/- 1 dB).
  - c) Click the **Provisioning > Opt. Ampli. Line > Parameters** tabs and record the Power value of the LINE-TX port.
  - d) Verify that the LINE-TX value matches the power on the LINE-TX port power value in node view **Provisioning > WDM-ANS > Provisioning** tabs (+/- 2 dB).
  - e) Record the optical power meter value.
  - f) Verify that the optical power meter value matches the LINE-TX value in step 26c (+/- 1 dB).
- Step 27** Delete the OCHNC DCN circuit on wavelength  $yyyy.yy$  from LINE amplifier of Side  $x$  to local add/drop ports of the 80-WXC-C card of Side  $x$  using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 28** In card view, display the transponder card and click the **Provisioning > Line** tabs. For the trunk port, choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list and click **Apply**.
- Step 29** To test all wavelengths, repeat step 5 through step 28 for each wavelength. In step 5, set the wavelength to the next wavelength.
- Step 30** Remove the fiber jumper connected between the DROP-TX port and the AD port in the 80-WXC-C card on Side  $x$ .
- Step 31** Restore the original connections between the AD and DROP-TX ports of the 80-WXC-C card and the respective ports of the 15216 40 or 48-channel mux/demux patch panel according to the Cisco Transport Planner Internal Connections Report.
- Step 32** Use a fiber jumper to connect the TX port to the RX port associated to the wavelength  $yyyy.yy$  to be tested in the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD or in the 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN unit for Side  $x$  (depending on which 15216 40 or 48-channel mux/demux patch panel the wavelength  $yyyy.yy$  is managed).
- Step 33** Select a wavelength  $yyyy.yy$  on the full C band tunable transponder. Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder for the selected wavelength  $yyyy.yy$ .
- Step 34** Create an OCHNC DCN circuit on wavelength  $yyyy.yy$  from LINE amplifier of side  $x$  to local add/drop ports of the 80-WXC-C card of Side  $x$  using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task and wait till all the alarms clear on the node.
- Step 35** In card view, display the 80-WXC-C card for Side  $x$  and complete the following steps:
- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the DROP-TX port.
  - b) Click the **Provisioning > WXC Line > Parameters** tabs and record the Power value of the AD port.
  - c) Verify that the Power value of the AD port in step 35b is > the Power value of the DROP-TX port in step 35a – 18dB.
- Step 36** Delete the OCHNC DCN circuit on wavelength  $yyyy.yy$  from LINE amplifier of Side  $x$  to local add/drop ports of the 80-WXC-C card of Side  $x$  using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 37** In card view, display the transponder card and click the **Provisioning > Line** tabs. For the trunk port, choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list and click **Apply**.
- Step 38** Remove the fiber jumper that was connected in step 32 between the TX and RX ports associated to the tested wavelength  $yyyy.yy$  on the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD or the 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN unit for Side  $x$ .
- Step 39** To verify all the 40 ports of the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit and the 40 ports of the 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN unit, repeat the

previous steps from step 32 through step 37 by changing the wavelength *yyyy.yy* to cover all other 79 available wavelengths.

- Step 40** Disconnect the optical power meter from the LINE-TX port of the booster amplifier of the Side *x*.
- Step 41** Disconnect the transponder output port (with the 15-dB attenuator) from the LINE-RX port of the booster amplifier of the Side *x*.
- Step 42** Repeat step 3 through step 41 for all the others sides that are being installed.
- Step 43** In card view, display the OPT-AMP-C card configured as LINE for Side *x* (slot 1 or 17) and complete the following:
- Click the **Maintenance** > **ALS** tabs and from the OSRI pull-down menu, select **OFF**.
  - From the ALS Mode pull-down menu, select **Auto Restart**.

**Stop. You have completed this procedure.**

## NTP-G44 Performing the Anti-ASE Hub Node Acceptance Test

|                                |                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests an anti-ASE hub node.                                                                                                       |
| <b>Tools/Equipment</b>         | A tunable laser or a TXP_MR_10E_C card<br>An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                           |
| <b>Required/As Needed</b>      | As needed                                                                                                                                        |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                           |
| <b>Security Level</b>          | Superuser only                                                                                                                                   |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of "Turn Up a Node" chapter, they can be used for this procedure. No additional cabling changes are needed.

### Procedure

- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the "[DLP-G128 Disable Alarm Filtering](#)" task as necessary.

- b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.

Refer the [Turn Up a Node](#) for procedures.

**Note** The OSC terminations created during node turn-up will generate two alarms for each side of the shelf: one for LOS on the OPT-BST or OPT-BST-E card, and the other for LOS on the OSC-CSM or OSCM card.

- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are Success - Changed or Success - Unchanged. If any are not, complete the following steps:
- Delete the two OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 4** From your Cisco TransportPlanner site configuration file, identify the dropped and added channels that are configured in pass-through mode in both directions.
- Note** Configuring a channel pass-through mode means that the channel is dropped along one direction by a 32DMX-O/32DMX or 40-DMX-C (15xx.xx TX port) located on one side (Side A or Side B) of the shelf, and then added by a 32MUX-O/40-DMX-C (1522.22 RX port) on the opposite side of the shelf but in the same direction. The channel is not terminated inside the site.
- Step 5** Create a loopback on the Side A OPT-BST or OPT-BST-E amplifier by connecting a patchcord from the LINE TX port to the LINE RX port with a 10-dB bulk attenuator.
- Step 6** Verify that the OSC link becomes active on the Side A OSCM or OSC-CSM card. (The OSC termination must already be provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Step 7** For pass-through channels, continue with [Step 8](#). For add and drop channels, continue with [Step 17](#).
- Step 8** Verify the first channel connection configured in pass-through mode in both directions:
- If you are using a tunable laser, set the output power to a nominal value, such as -3 dBm. If you are using a TXP\_MR\_10E\_C card, continue with [Step b](#).
  - Set the tunable laser or TXP\_MR\_10E\_C card to a corresponding wavelength on the 100-GHz ITU-T grid. Refer to the tunable laser manufacturer’s documentation or the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task on page 15-23.

- c) Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the LINE RX port of the Side B OPT-BST or OPT-BST-E using a 10-dB bulk attenuator.
- Step 9** Complete the [“DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power”](#) task for the Side B OPT-PRE amplifier.
- Step 10** Complete the [“DLP-G269 Verifying the 32DMX-O or 40-DMX-C Card Power”](#) task for the Side A 32MUX-O or 40-MUX-C cards.
- Step 11** Complete the [“DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power”](#) task for the Side A OPT-BST or OPT-BST-E amplifier.
- Step 12** Complete the [“DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power”](#) task for the Side A OPT-PRE amplifier.
- Step 13** Complete the [“DLP-G269 Verifying the 32DMX-O or 40-DMX-C Card Power”](#) task for the Side A 32DMX-O or 40-DMX-C cards.
- Step 14** Complete the [“DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power”](#) task for the Side B OPT-BST or OPT-BST-E amplifier.
- Step 15** Repeat Steps 8 through 14 for the remaining wavelengths on the 100-GHz grid that are pass-through wavelengths.
- Step 16** If you have add and drop channels, continue with Step 17 to verify the channels. If not, continue with Step 29.
- Step 17** Set the tunable laser or TXP\_MR\_10E\_C card to the first wavelength of the 100-GHz ITU-T grid that is not a pass-through wavelength. Refer to the tunable laser manufacturer’s documentation or the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task.
- Step 18** Connect the tunable laser or TXP\_MR\_10E\_C card to the CHAN RX *nn* port on the Side A 32MUX-O card, where *nn* is the first add or drop channel.
- Step 19** Display the Side A 32MUX-O or 40-MUX-C card in card view.
- Step 20** Click the **Provisioning > Optical Chn > Parameters** tabs.
- Step 21** Change the administrative state of Port *nn* to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)**.
- Step 22** Check that the power value on Port *nn* reaches the provisioned set point (VOA Power Ref).
- Step 23** Display the Side A 32DMX-O/32DMX OR 40-DMX-C card in card view.
- Step 24** Click the **Provisioning > Optical Chn > Parameters** tabs.
- Step 25** Change the administrative state of Port *nn* to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)**.
- Step 26** Check that the power value on Port *nn* reaches the provisioned set point (VOA Power Ref).
- Step 27** Connect a power meter to the CHAN TX *nn* port through the patch panel and verify that the physical optical power coming out of drop Port *nn* on the Side A 32DMX-O/32DMX or 40-DMX-C card is consistent with the value read on the meter within 0.5 dB.
- Step 28** Repeat Steps 17 through 27 for the remaining wavelengths on the 100-GHz grid that are not pass-through wavelengths.
- Step 29** Remove the loopback connection on the Side A OPT-BST or OPT-BST-E card.
- Step 30** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 31** Create a loopback on the Side B OPT-BST or OPT-BST-E amplifier by connecting a patchcord from the LINE TX port to the LINE RX port with 10-dB bulk attenuator.
- Step 32** Verify that the OSC link becomes active on the Side B OSCM card. (The OSC termination must be already provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Step 33** Repeat 17 through 30 for Side B add and drop cards.
- Step 34** Remove the loopback on the Side B OPT-BST or OPT-BST-E card.
- Step 35** Restore the default administrative state (IS,AINS/Unlocked,automaticInService) on all the ports previously

set to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI).  
**Stop. You have completed this procedure.**

## NTP-G45 Performing the C-Band and L-Band Line Amplifier Node with OSCM Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests the C-band and L-band line amplifier node with OSCM cards installed on both the Side B and Side A sides of the shelf by looping a single wavelength through the shelf.                                                                                            |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C for C-band testing</li> <li>• TXP_MR_10E_L for L-band testing</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | DLP-G46 Log into CTC<br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                 |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                              |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                 |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                         |



### Note

- To perform L-Band line amplifier node with OSCM cards acceptance test, repeat all the procedures in this NTP by replacing the TXP\_MR\_10E\_C card with TXP\_MR\_10E\_L card and OPT-BST card with the OPT-BST-L.
- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- Step 1** If you are using TXP\_MR\_10E\_C cards, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” If not, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go to Home View**.
- Step 3** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the “[DLP-G128 Disable Alarm Filtering](#)” task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate two alarms for each side of the shelf, one for LOS on the OPT-BST or OPT-BST-E card and the other for LOS on the OSCM card.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If any are not, complete the following steps:
- Delete the two OSC channels using the “[DLP-G186 Delete an OSC Termination](#)” task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a loopback on the Side A OPT-BST or OPT-BST-E card by using a fiber with a 10-dB bulk attenuator to connect the LINE TX port to the LINE RX port.
- Step 6** If you are using a tunable laser, follow the manufacturer’s instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 7](#).
- Set the output power to a nominal value, such as -3 dBm.
  - Set the tuner to the wavelength under test, then continue with [Step 8](#).
- Step 7** If you are using a TXP\_MR\_10E\_C card, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” task, for the TXP transmitting the wavelength you will test. Refer to Table 11-42 10G Data Muxponder Card Settings in "Provision Transponder and Muxponder Cards" chapter, if needed.
- Step 8** Connect the tunable laser transmitter, the TXP\_MR\_10E\_C card, or DWDM TX port to the LINE RX port of the Side B OPT-BST or OPT-BST-E card using a 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 9** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the Side A OPT-BST or OPT-BST-E and OSCM cards have cleared. The clearing of the LOS alarms indicates that the OSC link is active on Side A.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm continues to appear due to the OSC signal loopback. An LOS-O alarm appears on the Side B OPT-BST or OPT-BST-E card, and an LOS alarm appears on the Side B OSCM card.
- If the alarms clear, continue with [Step 10](#). If not, perform the following steps:
- Display the Side A OPT-BST or OPT-BST-E card in card view.
  - Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - In the Types area, click **Alarms**, then click **Refresh**.

- d) Locate the Port 2 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
  - e) Locate the Port 4 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
  - f) Click **Apply**, and then **Yes**.
  - g) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side A OPT-BST or OPT-BST-E card has cleared. If so, continue with [Step 10](#). If not, disconnect the OSCM card from the OPT-BST card.
  - h) Create a loopback on the OSCM card by connecting a patch cable from the OSC TX port to the OSC RX port using a 10-dB bulk attenuator.
  - i) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side A OSCM card has cleared. If so, replace the OPT-BST or OPT-BST-E card. If not, replace the OSCM card. See the “NTP-G30 Install the DWDM Cards” in “Turn Up a Node” chapter.
- Step 10** If an OPT-PRE card or an OPT-AMP-L card (provisioned as an OPT-PRE) is installed on Side B, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 11](#).
- Step 11** Complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task for the Side A OPT-BST or OPT-BST-E amplifier.
- Step 12** If an OPT-PRE amplifier or an OPT-AMP-L amplifier (provisioned as an OPT-PRE) is installed on Side A, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 13](#).
- Step 13** Complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task for the Side B OPT-BST or OPT-BST-E amplifier.
- Step 14** Disconnect the TXP card or tunable laser from the Side B OPT-BST or OPT-BST-E card.
- Step 15** Remove the loopback on the Side A OPT-BST or OPT-BST-E card created in [Step 5](#).
- Step 16** Create a loopback on the Side B OPT-BST or OPT-BST-E card by connecting a patchcord from the LINE TX port to the LINE RX port with a 10-dB bulk attenuator.
- Step 17** If you are using a tunable laser, follow the manufacturer’s instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 18](#).
- a) Set the output power to a nominal value, such as  $-3$  dBm.
  - b) Set the tuner to the wavelength under test, then continue with [Step 19](#).
- Step 18** If you are using a TXP\_MR\_10E\_C card, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” task, for the TXP transmitting the wavelength you will test. Refer to Table 11-42 10G Data Muxponder Card Settings in “Provision Transponder and Muxponder Cards” chapter, if needed.
- Step 19** Connect the tunable laser transmitter, the TXP\_MR\_10E\_C card, or DWDM TX port to the LINE RX port of the Side A OPT-BST or OPT-BST-E card using a 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 20** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the Side B OPT-BST or OPT-BST-E card and the Side B OSCM cards have cleared. The clearing of the LOS alarms indicates that the OSC link is active on Side B.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback. An LOS-O alarm appears on the Side A OPT-BST or OPT-BST-E card, and an LOS alarm appears on the Side A OSCM card.
- If the alarms clear, continue with [Step 21](#). If not, perform the following steps:

- a) Display the Side B OPT-BST or OPT-BST-E card in card view.
- b) Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
- c) In the Types area, click **Alarms**, then click **Refresh**.
- d) Locate the Port 2 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
- e) Locate the Port 4 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
- f) Click **Apply**, and then **Yes**.
- g) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the Side B OPT-BST or OPT-BST-E card has cleared. If so, continue with [Step 21](#). If not, disconnect the OSCM card from the OPT-BST or OPT-BST-E card.
- h) Create a loopback on the OSCM card by connecting a patch cable from the OSC TX port to the OSC RX port using a 10-dB bulk attenuator.
- i) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the Side B OSCM card has cleared. If so, replace the OPT-BST or OPT-BST-E card. If not, replace the OSCM card. See the [NTP-G30 Installing the DWDM Cards](#) task.

**Step 21** If an OPT-PRE card or an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on Side A, complete the [“DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power”](#) task. If not, continue with [Step 22](#).

**Step 22** Complete the [“DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power”](#) task for the Side B OPT-BST or OPT-BST-E amplifier.

**Step 23** If an OPT-PRE amplifier or an OPT-AMP-L (provisioned in OPT-PRE mode) amplifier is installed on Side B, complete the [“DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power”](#) task. If not, continue with [Step 24](#).

**Step 24** Complete the [“DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power”](#) task for the Side A OPT-BST or OPT-BST-E amplifier.

**Step 25** Disconnect the TXP or tunable laser from the Side A OPT-BST or OPT-BST-E card.

**Step 26** Remove the loopback on the Side B OPT-BST or OPT-BST-E amplifier created in [Step 16](#).

**Step 27** Delete both OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.

**Step 28** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.

**Step 29** Create the two OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.

**Stop. You have completed this procedure**

## NTP-G46 Performing the C-Band Line Amplifier Node with OSC-CSM Cards Acceptance Test

|                |                                                                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b> | This procedure tests a C-band line amplifier node with OSC-CSM cards installed on both Side B and Side A of the shelf by looping a single wavelength through the shelf. |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                |                                                                                                                                                                                                                                              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tools/Equipment</b>         | <p>One of the following:</p> <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_C card</li> </ul> <p>An optical power meter or optical spectrum analyzer<br/>Two bulk attenuators (10 dB) with LC connectors</p> |
| <b>Prerequisite Procedures</b> | <p>DLP-G46 Log into CTC</p> <p><a href="#">Turn Up a Node</a></p>                                                                                                                                                                            |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                    |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                       |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                               |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of "Turn Up a Node" chapter, they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- Step 1** If you are using TXP\_MR\_10E\_C cards, complete the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task. If not, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go to Home View**.
- Step 3** Click the **Alarms** tab.
- a) Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate an LOS alarm on the OSC-CSM card.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If any are not, complete the following:
- a) Delete the two OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.
  - b) Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - c) Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a physical loopback on the Side A OSC-CSM card by connecting the LINE TX port to the LINE RX port with a fiber and 10-dB bulk attenuator.

**Caution** Failure to use proper attenuation might damage the equipment.

**Step 6** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side A OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active on Side A.

**Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback, and an LOS alarm will appear for the Side B OSC-CSM card, Port 1 (OSC).

If the alarm clears, continue with [Step 7](#). If not, perform the following steps:

- a) Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.
- b) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side A OSC-CSM card clears, continue with [Step 7](#). If not, continue with [Step c](#).
- c) Display the OSC-CSM card in card view.
- d) Click the **Provisioning** > **Optical Line** > **Optics Threshold** tabs.
- e) In the Types area, click **Alarm**, then click **Refresh**.
- f) Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to -30 dBm.
- g) Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to -40 dBm.
- h) Click **Apply**, and then **Yes**.
- i) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side A OSC-CSM card clears, continue with [Step 7](#). If not, replace the OSC-CSM card.

**Step 7** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 8](#).

- a) Set the output power to a nominal value, such as -3 dBm.
- b) Set the tuner to the wavelength under test, then continue with [Step 9](#).

**Step 8** If you are using a TXP\_MR\_10E\_C card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the TXP containing the wavelength you will test. Refer to [Table 1](#), if needed.

**Step 9** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the Side B OSC-CSM LINE RX port using a 10-dB bulk attenuator.

**Caution** Failure to use proper attenuation might damage the equipment.

**Step 10** If an OPT-PRE card is installed on Side B, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task. If not, continue with [Step 11](#).

**Step 11** Display the Side A OSC-CSM card in card view.

**Step 12** Click the **Provisioning** > **Optical Line** > **Parameters** tabs. Locate the Port 3 Power value. Verify that the value is higher than -30 dBm. If the power value is not higher than -30 dBm, check your connections and clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.

**Step 13** If an OPT-PRE card is installed on Side A of the shelf, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task. If not, continue with [Step 14](#).

**Step 14** Display the Side B OSC-CSM card in card view.

**Step 15** Click the **Provisioning** > **Optical Line** > **Parameters** tabs. Locate the Port 2 Power value. Verify that the value is higher than -30 dBm. If the power value is not higher than -30 dBm, check your connections and

clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.

- Step 16** Disconnect the TXP or tunable laser from the Side B OSC-CSM card.
- Step 17** Remove the physical loopback created on the Side A OSC-CSM card in [Step 5](#).
- Step 18** Create a loopback on the Side B OSC-CSM card by connecting the LINE TX port with LINE RX port using a patchcord and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 19** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side B OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active on Side B.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback, and an LOS alarm will appear for the Side A OSC-CSM card, Port 1 (OSC).
- If the alarm clears, continue with [Step 20](#). If not, perform the following steps:
- Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.
  - Wait 90 to 100 seconds then, in node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side B OSC-CSM card clears, continue with [Step 20](#). If not, continue with [Step c](#).
  - Display the OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - In the Types area, click **Alarm**, then click **Refresh**.
  - Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
  - Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
  - Click **Apply**, and then **Yes**.
  - In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side B OSC-CSM card clears, continue with [Step 20](#). If not, replace the OSC-CSM card.
- Step 20** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 21](#).
- Set the output power to a nominal value, such as  $-3$  dBm.
  - Set the tuner to the wavelength under test, then continue with [Step 22](#).
- Step 21** If you are using a TXP\_MR\_10E\_C card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the TXP containing the wavelength you will test. Refer to [Table 1](#), if needed.
- Step 22** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the Side A OSC-CSM LINE RX port using a 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 23** If an OPT-PRE card is installed on Side A, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task. If not, continue with [Step 24](#).
- Step 24** Display the Side B OSC-CSM card in card view.
- Step 25** Click the **Provisioning > Optical Line > Parameters** tabs. Locate the Port 3 Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and

clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.

- Step 26** If an OPT-PRE is installed on Side B of the shelf, complete the [DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#) task for the Side B OPT-PRE amplifier. If not, continue with [Step 27](#).
- Step 27** Display the Side A OSC-CSM card in card view.
- Step 28** Click the **Provisioning > Optical Line > Parameters** tabs and locate the Power value for Port 2. Verify that the value is higher than –30 dBm. If the power value is not higher than –30 dBm, check your connections and clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.
- Step 29** Disconnect the TXP card or tunable laser from the Side A OSC-CSM card.
- Step 30** Remove the loopback created on the Side B OSC-CSM card in [Step 18](#).
- Step 31** Delete both OSC channels. See the “[DLP-G186 Delete an OSC Termination](#)” task.
- Step 32** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 33** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Stop. You have completed this procedure.**

## NTP-G156 Performing the L-Band Line Amplifier Node with OSC-CSM Cards Acceptance Test

|                                |                                                                                                                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests a L-band line amplifier node with OSC-CSM cards installed on both Side B and Side A of the shelf by looping a single wavelength through the shelf.                                                       |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_MR_10E_L card</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |
| <b>Prerequisite Procedures</b> | DLP-G46 Log into CTC<br><a href="#">Turn Up a Node</a>                                                                                                                                                                        |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                     |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                        |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- Step 1** If you are using TXP\_MR\_10E\_L cards, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task. If not, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go to Home View**.
- Step 3** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate an LOS alarm on the OSC-CSM card.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as Success - Changed or Success - Unchanged. If any are not, complete the following:
- Delete the two OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a physical loopback on the Side A OSC-CSM by connecting the LINE TX port to the LINE RX port with a fiber and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 6** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side A OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active on Side A.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback, and an LOS alarm will appear for the Side B OSC-CSM card, Port 1 (OSC).
- If the alarm clears, continue with [Step 7](#). If not, perform the following steps:
- Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.
  - In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side A OSC-CSM card clears, continue with [Step 7](#). If not, continue with [Step c](#).
  - Display the OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Parameters** tabs.
  - In the Types area, click **Alarm**, then click **Refresh**.
  - Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to -30 dBm.

- g) Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
  - h) Click **Apply**, and then **Yes**.
  - i) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side A OSC-CSM card clears, continue with [Step 7](#). If not, replace the OSC-CSM card.
- Step 7** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_L card, continue with [Step 8](#).
- a) Set the output power to a nominal value, such as  $-3$  dBm.
  - b) Set the tuner to the wavelength under test, then continue with [Step 9](#).
- Step 8** If you are using a TXP\_MR\_10E\_L card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the wavelength you will test.
- Step 9** Connect the tunable laser transmitter or the TXP\_MR\_10E\_L card DWDM TX port to the Side B OSC-CSM LINE RX port using a 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 10** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on Side B, complete the [DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power](#) task. If not, continue with [Step 11](#).
- Step 11** Display the Side A OSC-CSM card in card view.
- Step 12** Click the **Provisioning > Optical Line > Parameters** tabs. Locate the Port 3 Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and clean the fibers using the *Cisco NCS 2000 Series Troubleshooting Guide* task. If this does not change the power value, consult your next level of support.
- Step 13** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on Side A of the shelf, complete the [DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power](#) task. If not, continue with [Step 14](#).
- Step 14** Display the Side B OSC-CSM card in card view.
- Step 15** Click the **Provisioning > Optical Line > Parameters** tabs. Locate the Port 2 Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and clean the fibers using the *Cisco NCS 2000 Series Troubleshooting Guide* task. If this does not change the power value, consult your next level of support.
- Step 16** Disconnect the TXP card or tunable laser from the Side B OSC-CSM card.
- Step 17** Remove the physical loopback created on the Side A OSC-CSM card in [Step 5](#).
- Step 18** Create a loopback on the Side B OSC-CSM by connecting the LINE TX port with LINE RX port using a patchcord and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 19** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the Side B OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active on Side B.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback, and an LOS alarm will appear for the Side A OSC-CSM card, Port 1 (OSC).
- If the alarm clears, continue with [Step 20](#). If not, perform the following steps:
- a) Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.

- b) Wait 90 to 100 seconds then, in node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side B OSC-CSM card clears, continue with [Step 20](#). If not, continue with [Step c](#).
- c) Display the OSC-CSM card in card view.
- d) Click the **Provisioning Optical Line Optics Thresholds** tabs.
- e) In the Types area, click **Alarm**, then click **Refresh**.
- f) Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
- g) Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
- h) Click **Apply**, and then **Yes**.
- i) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the Side B OSC-CSM card clears, continue with [Step 20](#). If not, replace the OSC-CSM card.

- Step 20** Alarms If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_L card, continue with [Step 21](#).
- a) Set the output power to a nominal value, such as  $-3$  dBm.
  - b) Set the tuner to the wavelength under test, then continue with [Step 22](#).
- Step 21** If you are using a TXP\_MR\_10E\_L card, complete the [DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#) task for the wavelength you will test.
- Step 22** Connect the tunable laser transmitter or the TXP\_MR\_10E\_L card DWDM TX port to the Side A OSC-CSM LINE RX port using a 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 23** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on Side A, complete the [DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power](#) task. If not, continue with [Step 24](#).
- Step 24** Display the Side B OSC-CSM card in card view.
- Step 25** Click the **Provisioning > Optical Line > Parameters** tabs. Locate the Port 3 Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and clean the fibers using the *Cisco NCS 2000 Series Troubleshooting Guide* task. If this does not change the power value, consult your next level of support.
- Step 26** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on Side B, complete the [DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power](#) task. If not, continue with [Step 27](#).
- Step 27** Display the Side A OSC-CSM card in card view.
- Step 28** Click the **Provisioning > Optical Line > Parameters** tabs and locate the Power value for Port 2. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and clean the fibers using the *Cisco NCS 2000 Series Troubleshooting Guide* task. If this does not change the power value, consult your next level of support.
- Step 29** Disconnect the TXP card or tunable laser from the Side A OSC-CSM card.
- Step 30** Remove the loopback created on the Side B OSC-CSM card in [Step 18](#).
- Step 31** Delete both OSC channels. See the "[DLP-G186 Delete an OSC Termination](#)" task.
- Step 32** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 33** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Stop. You have completed this procedure.**
-

## NTP-G47 Performing the C-Band Line Amplifier Node with OSCM and OSC-CSM Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests a C-band line amplifier node provisioned with an OSC-CSM card installed on one side of the shelf and an OSCM card installed on the other. This test verifies that a line amplifier node provisioned is operating properly before you connect it to the network. The test verifies the operation of the amplifiers and checks the power levels at each transmit and receive port to ensure that power loss in the cabling is within tolerance. |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser or</li> <li>• TXP_MR_10E_C card</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                                                                   |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



### Note

- Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.
- Because the node is isolated and no line-side fibers are connected during the test, the power levels going into the line-side cards will not be the same as the levels when the node is connected to the network. Therefore, if the line amplifier shelf does not contain OPT-BST or OPT-BST-E amplifiers and OPT-PRE amplifiers on both Side B and Side A, you must lower the OPT-PRE power thresholds so that it turns on properly. At the end of the test, you will run ANS to configure the node with the correct parameters for the network acceptance test.

## Procedure

- Step 1** If you are using TXP\_MR\_10E\_C cards, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” task. If not, continue with [Step 2](#).
- Step 2** Display the terminal node in node view (single-shelf mode) or multishelf view (multishelf mode).
- Step 3** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the “[DLP-G128 Disable Alarm Filtering](#)” task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.
- Note** The OSC terminations created during node turn-up will generate two alarms for each side of the shelf, one for an LOS on the OPT-BST or OPT-BST-E card, and the other for an LOS on the OSC-CSM or OSCM card.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are listed as **Success - Changed** or **Success - Unchanged**. If any are not, complete the following:
- Delete the two OSC channels using the “[DLP-G186 Delete an OSC Termination](#)” task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a loopback on the OSC-CSM card by connecting the LINE TX port to the LINE RX port using a patchcord and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 6** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active for this side of the shelf.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback.
- If the alarm clears, continue with [Step 7](#). If not, perform the following steps:
- Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.
  - In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the OSC-CSM card clears, continue with [Step 7](#). If not, continue with [Step c](#).
  - Display the OSC-CSM card in card view.
  - Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - In the Types area, click **Alarm**, then click **Refresh**.
  - Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
  - Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
  - Click **Apply**, and then **Yes**.
  - In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the OSC-CSM card clears, continue with [Step 7](#). If not, replace the OSC-CSM card.
- Step 7** If you are using a tunable laser, follow the manufacturer’s instructions to complete the following steps. If you are using a TXP\_MR\_10E\_C card, continue with [Step 8](#).

- a) Set the output power to a nominal value, such as  $-3$  dBm.
  - b) Set the tuner to the wavelength under test, then continue with [Step 9](#).
- Step 8** If you are using a TXP\_MR\_10E\_C card, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” task for the TXP containing the wavelength you will test. Refer to [Table 15-1 on page 15-40](#), if needed.
- Step 9** Measure the TXP output power by connecting the TXP DWDM TX port to a test meter. Record the results for future reference.
- Step 10** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the OPT-BST or OPT-BST-E LINE RX port using a fiber patchcord and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 11** If an OPT-PRE card is installed on the side opposite the OSC-CSM, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 12](#).
- Step 12** Display the OSC-CSM card in card view.
- Step 13** Click the **Provisioning > Optical Line > Parameters** tabs and locate the Port 2 (COM-RX) Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.
- Step 14** If an OPT-PRE card is installed on the same Side As the OSC-CSM, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 15](#).
- Step 15** Complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task for the OPT-BST or OPT-BST-E card.
- Step 16** Disconnect the TXP or tunable laser from the OPT-BST or OPT-BST-E card.
- Step 17** Remove the loopback fiber on the OSC-CSM card.
- Step 18** Delete both OSC channels. See the “[DLP-G186 Delete an OSC Termination](#)” task.
- Step 19** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 20** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 21** Create a loopback on the OPT-BST or OPT-BST-E card by connecting the LINE TX port with LINE RX port using a patchcord and 10-dB bulk attenuator.
- Step 22** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the OPT-BST or OPT-BST-E card and the OSCM card have cleared. The clearing of the LOS alarms indicates that the OSC link is active for this side of the shelf.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback.
- If the alarms clear, continue with [Step 23](#). If not, perform the following steps:
- a) Display the OPT-BST or OPT-BST-E card in card view.
  - b) Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
  - c) In the Types area, click **Alarms**, then click **Refresh**.
  - d) Locate the Port 2 (COM-TX) Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
  - e) Locate the Port 4 (OSC-TX) Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
  - f) Click **Apply**, and then **Yes**.

- g) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the OPT-BST or OPT-BST-E card has cleared. If so, continue with [Step 23](#). If not, disconnect the OSCM card from the OPT-BST or OPT-BST-E card.
  - h) Create a loopback on the OSCM card by connecting a patch cable from the OSC TX port to the OSC RX port using a 10-dB bulk attenuator.
  - i) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the OSCM card has cleared. If not, check your connections and clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.
- Step 23** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the OSC-CSM LINE RX port using a fiber patchcord and 10-dB bulk attenuator.
- Step 24** If an OPT-PRE is installed on the same side of the shelf as the OSC-CSM, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 25](#).
- Step 25** Complete the “[DLP-G79 Verifying the OPT-BST, OPT-BST-E, or OPT-BST-L Amplifier Laser and Power](#)” task for the OPT-BST or OPT-BST-E card.
- Step 26** Display the OSC-CSM card in card view.
- Step 27** Click the **Provisioning > Optical Line > Parameters** tabs. Verify that the power value on Port 3 (COM-TX) is equal to the optical power from the tunable laser or TXP\_MR\_10E\_C card (measured in [Step 9](#)) –10 dB, +/- 2 dB. If not, check your connections and clean the fibers using the [NTP-L22 Cleaning Fiber Connectors](#) task. If this does not change the power value, consult your next level of support.
- Step 28** If an OPT-PRE card is installed on the side opposite the OSC-CSM, complete the “[DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power](#)” task. If not, continue with [Step 29](#).
- Step 29** Disconnect the TXP or tunable laser from the OSC-CSM card.
- Step 30** Remove the loopback fiber on the OPT-BST or OPT-BST-E amplifier card.
- Step 31** Delete both OSC channels. See the “[DLP-G186 Delete an OSC Termination](#)” task.
- Step 32** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 33** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Stop. You have completed this procedure.**

## NTP-G157 Performing the L-Band Line Amplifier Node with OSCM and OSC-CSM Cards Acceptance Test

|                        |                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>         | This procedure tests a L-band line amplifier node with an OSC-CSM card installed on one side of the shelf and an OSCM card installed on the other.                                                                               |
| <b>Tools/Equipment</b> | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser or</li> <li>• TXP_MR_10E_L card</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors |

|                                |                                                                        |
|--------------------------------|------------------------------------------------------------------------|
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a> |
| <b>Required/As Needed</b>      | As needed                                                              |
| <b>Onsite/Remote</b>           | Onsite                                                                 |
| <b>Security Level</b>          | Superuser only                                                         |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of Chapter 14, [Turn Up a Node](#) task they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- Step 1** If you are using TXP\_MR\_10E\_L cards, complete the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task. If not, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go to Home View**.
- Step 3** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Note** The OSC terminations created during node turn-up will generate two alarms for each side of the shelf, one for an LOS on the OPT-BST-L card, and the other for an LOS on the OSC-CSM or OSCM card. If OSCM cards are installed on ANSI shelves, EOC DCC Termination Failure alarms will appear.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Success - ChangedProvisioning > WDM-ANS > Port Statustabs**. Verify that all statuses under Link Status are listed as **Success - Changed** or **Success - Unchanged**. If any are not, complete the following:
- Delete the two OSC channels using the [“DLP-G186 Delete an OSC Termination”](#) task.
  - Complete the [NTP-G37 Running Automatic Node Setup](#) task.
  - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 5** Create a loopback on the OSC-CSM card by connecting the LINE TX port to the LINE RX port using a fiber patchcord and 10-dB bulk attenuator.
- Caution** Failure to use proper attenuation might damage the equipment.
- Step 6** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarm on the OSC-CSM card has cleared. The clearing of the LOS alarm indicates that the OSC link is active for this side of the shelf.

**Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback.

If the alarm clears, continue with [Step 7](#). If not, perform the following steps:

- a) Remove the 10-dB bulk attenuator on the OSC-CSM LINE TX and LINE RX ports and reconnect using only the patchcord.
- b) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the OSC-CSM card clears, continue with [Step 7](#). If not, continue with [Step c](#).
- c) Display the OSC-CSM card in card view.
- d) Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
- e) In the Types area, click **Alarm**, then click **Refresh**.
- f) Locate the Port 3 Power Failure Low parameter. Double-click the table cell and change the value to  $-30$  dBm.
- g) Locate the Port 6 Power Failure Low parameter. Double-click the table cell and change the value to  $-40$  dBm.
- h) Click **Apply**, and then **Yes**.
- i) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. If the LOS alarm on the OSC-CSM card clears, continue with [Step 7](#). If not, replace the OSC-CSM card.

**Step 7** If you are using a tunable laser, follow the manufacturer's instructions to complete the following steps. If you are using a TXP\_MR\_10E\_L card, continue with [Step 8](#).

- a) Set the output power to a nominal value, such as  $-3$  dBm.
- b) Set the tuner to the wavelength under test, then continue with [Step 9](#).

**Step 8** If you are using a TXP\_MR\_10E\_L card, complete the “[DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing](#)” task for the wavelength you will test.

**Step 9** Measure the TXP card output power by connecting the TXP card DWDM TX port to a test meter. Record the results for future reference.

**Step 10** Connect the tunable laser transmitter or the TXP\_MR\_10E\_L card DWDM TX port to the OPT-BST-L LINE RX port using a 10-dB bulk attenuator.

**Caution** Failure to use proper attenuation might damage the equipment.

**Step 11** Display the OPT-BST-L card in card view.

**Step 12** Click the **Provisioning > Optical Line > Parameters** tabs. Verify that the power value on Port 2 (Out Com) is equal to the optical power from the tunable laser or TXP\_MR\_10E\_L card (measured in [Step 9](#)),  $\pm 1.0$  dBm.

**Step 13** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on the side opposite the OSC-CSM card, complete the “[DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power](#)” task. If not, continue with [Step 14](#).

**Step 14** Display the OSC-CSM card in card view.

**Step 15** Click the **Provisioning > Optical Line > Parameters** tabs and locate the Port 3 Power value. Verify that the value is higher than  $-30$  dBm. If the power value is not higher than  $-30$  dBm, check your connections and

clean the fibers using the “NTP-L22 Cleaning Fiber Connectors” procedure in the *Cisco NCS 2000 Series Hardware Installation Guide*. If this does not change the power value, consult your next level of support.

- Step 16** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on the same Side As the OSC-CSM, complete the [“DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power”](#) task. If not, continue with [Step 17](#).
- Step 17** Complete the [DLP-G359 Verifying the OPT-BST-L or OPT-AMP-L \(OPT-Line Mode\) Amplifier Laser and Power](#) for the OPT-BST-L card.
- Step 18** Disconnect the TXP card or tunable laser from the OPT-BST-L card.
- Step 19** Remove the loopback fiber on the OSC-CSM card.
- Step 20** Delete both OSC channels. See the [“DLP-G186 Delete an OSC Termination”](#) task.
- Step 21** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 22** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Step 23** Create a loopback on the OPT-BST-L card by connecting the LINE TX port with LINE RX port using a patchcord and 10-dB bulk attenuator.
- Step 24** Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the OPT-BST-L and OSCM cards have cleared. The clearing of the LOS alarms indicates that the OSC link is active for this side of the shelf.
- Note** For ANSI shelves, an EOC DCC Termination Failure alarm will continue to appear due to the OSC signal loopback.

If the alarms clear, continue with [Step 25](#). If not, perform the following steps:

- a) Display the OPT-BST-L card in card view.
- b) Click the **Provisioning > Optical Line > Optics Thresholds** tabs.
- c) In the Types area, click **Alarms**, then click **Refresh**.
- d) Locate the Port 2 Power Failure Low parameter. Double-click the table cell and change the value to **-30 dBm**.
- e) Locate the Port 4 Power Failure Low parameter. Double-click the table cell and change the value to **-40 dBm**.
- f) Click **Apply**, and then **Yes**.
- g) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode) click the **Alarms** tab. Verify that the LOS alarms on the OPT-BST-L card has cleared. If so, continue with [Step 25](#). If not, disconnect the OSCM card from the OPT-BST-L card.
- h) Create a loopback on the OSCM card by connecting a patch cable from the OSC TX port to the OSC RX port using a 10-dB bulk attenuator.
- i) Wait 90 to 100 seconds, then in node view (single-shelf mode) or multishelf view (multishelf mode), click the **Alarms** tab. Verify that the LOS alarm on the OSCM card has cleared. If so, replace the OPT-BST-L

card. If not, replace the OSCM card. See the "NTP-G30 Install the DWDM Cards" in "Turn Up a Node" chapter.

- Step 25** Connect the tunable laser transmitter or the TXP\_MR\_10E\_L card DWDM TX port to the OSC-CSM LINE RX port using a 10-dB bulk attenuator.
- Step 26** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on the same side of the shelf as the OSC-CSM, complete the [“DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power”](#) task. If not, continue with [Step 27](#).
- Step 27** Complete the [DLP-G359 Verifying the OPT-BST-L or OPT-AMP-L \(OPT-Line Mode\) Amplifier Laser and Power](#) for the OPT-BST-L card.
- Step 28** Display the OSC-CSM card in card view.
- Step 29** Click the **Provisioning** > **Optical Line** > **Parameters** tabs. Verify that the power value on Port 3 (Out Com) is equal to the optical power from the tunable laser or TXP\_MR\_10E\_L card (measured in [Step 9](#)), +/- 1.0 dBm.
- Step 30** If an OPT-AMP-L card (provisioned in OPT-PRE mode) is installed on the side opposite the OSC-CSM, complete the [“DLP-G360 Verifying the OPT-AMP-L \(OPT-PRE Mode\) Amplifier Laser and Power”](#) task. If not, continue with step 31.
- Step 31** Disconnect the TXP card or tunable laser from the OSC-CSM card.
- Step 32** Remove the loopback fiber on the OPT-BST-L amplifier card.
- Step 33** Delete both OSC channels. See the [“DLP-G186 Delete an OSC Termination”](#) task.
- Step 34** Complete the [NTP-G37 Running Automatic Node Setup](#) task to restore the original configuration.
- Step 35** Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) task.
- Stop. You have completed this procedure.**

## NTP-G49 Performing the Active OADM Node Acceptance Test on a Symmetric Node with OSC-CSM Cards

|                                |                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure checks the integrity of all the optical connections in an OADM node with OSC-CSM cards and OPT-BST or OPT-BST-E cards installed on both Side B and Side A of the shelf. Three connection types are tested: <ul style="list-style-type: none"> <li>• Express</li> <li>• Pass-through</li> <li>• Add/Drop</li> </ul> |
| <b>Tools/Equipment</b>         | A tunable laser or a TXP_MR_10E_C card<br>An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                  |
| <b>Prerequisite Procedures</b> | DLP-G46 Log into CTC<br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                                                            |

|                           |                |
|---------------------------|----------------|
| <b>Required/As Needed</b> | As needed      |
| <b>Onsite/Remote</b>      | Onsite         |
| <b>Security Level</b>     | Superuser only |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

### Procedure

- Step 1** from the View menu, choose **Go to Network View**.
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are Success - Changed or Success - Unchanged. If not, complete the [NTP-G37 Running Automatic Node Setup](#) task.
- Step 4** Check the Cisco TransportPlanner site configuration file to verify the presence of added and dropped bands (including four channels at 100 GHz) configured in pass-through mode in either direction.
- Note** Configuring a band in pass-through mode means that the band is dropped in one direction by an AD-xB-xx.x card on one side (Side B or Side A) of the node, then added by another AD-xB-x.xx card on the opposite side in the same direction. The band is not terminated inside the node.
- Step 5** If no bands are configured in pass-through mode, continue with Step 7. If a band is configured in pass-through mode, mark it and skip the related optical test for the express, add, and drop sections. Band pass-through connections are verified separately.
- Step 6** Check the site configuration file from Cisco TransportPlanner to verify the presence of dropped or added channels configured in pass-through mode in either direction.
- Note** Configuring a channel in pass-through mode means that the channel is dropped in one direction by an AD-xC-xx.x card on one side (Side B or Side A) of the node, then added by another AD-xC-x.xx card on the opposite side in the same direction. The channel is not terminated inside the node.
- Step 7** If no channels are configured in pass-through mode, continue with [Step 8](#). If a channel is configured in pass-through mode, mark it and skip the related optical test for the express, add, and drop sections. Channel pass-through connections are verified separately.
- Step 8** Create a loopback on the Side A OSC-CSM card by connecting the LINE TX port to the LINE RX port using a patchcord and a 10-dB bulk attenuator.
- Step 9** Verify that the OSC link becomes active on the Side A OSC-CSM card. (The OSC termination must be already provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Note** Due to the OSC signal loopback, an EOC Termination Failure alarm might be raised on ANSI shelves.

- Step 10** If the OSC link becomes active, continue with [Step 11](#). If the OSC link does not turn up, perform the following troubleshooting steps:
- Remove the 10-dB bulk attenuator between the LINE TX and LINE RX connection. If the OSC link becomes active, continue with [Step 11](#). If not, continue with [Step b](#).
  - Modify the OSC Fail Low thresholds. Click the **Provisioning > Optical Line > Optics Thresholds** tabs and change the Port 6 opwrMin (minimum power) to -40 dBm.
  - Modify the COM TX Fail Low Threshold. Change the Port 3 opwrMin (minimum power) to -30 dBm.
  - If the OSC link turns up, continue with [Step 11](#). If it does not turn up, replace the OSC-CSM card.
- Step 11** If the node has express bands or channels, complete the [NTP-G86 Verifying Express Channel Connections on an OADM Node with OSC-CSM Cards](#) “NTP-G86 Verifying Express Channel Connections on an OADM Node with OSC-CSM Cards” task. If the node does not have express bands or channels, continue with [Step 12](#).
- Step 12** If connections configured in pass-through mode are present (noted in [Steps 5 and 7](#)), complete the [DLP-G89 Verifying OADM Node Pass-Through Channel Connections](#). If not, continue with [Step 13](#).
- Step 13** If connections have add/drop connections, complete the [DLP-G94 Verifying Add and Drop Connections on an OADM Node with OSC-CSM Cards](#) task.
- Stop. You have completed this procedure**

## DLP-G86 Verifying Express Channel Connections on an OADM Node with OSC-CSM Cards

|                                |                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task verifies the express channel connections for an OADM node with OSC-CSM cards during a node acceptance test. |
| <b>Tools/Equipment</b>         | A tunable laser or a TXP_MR_10E_C                                                                                     |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a>                                                                                  |
| <b>Required/As Needed</b>      | As needed                                                                                                             |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                |
| <b>Security Level</b>          | Superuser only                                                                                                        |

## Procedure

- 
- Step 1** If you are using a tunable laser, set the output power to a nominal value, such as  $-3$  dBm. If not, continue with step 2.
- Step 2** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the LINE RX port of the Side B OSC-CSM card.
- Step 3** If an OPT-PRE amplifier card is installed on Side B, install a 10-dB bulk attenuator on the COM RX port.
- Step 4** Based on the Cisco TransportPlanner site configuration file, tune the tunable laser or TXP\_MR\_10E\_C card to a wavelength (on the 100-GHz ITU-T grid) that runs on the express path of all AD-xB-xx.x and AD-xC-xx.x cards on the Side B-to-Side A and Side A-to-Side B directions. Refer to the tunable laser manufacturer's documentation or the ["DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing"](#) task.
- Step 5** Complete the ["DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power"](#) task for the OPT-PRE amplifier card installed on Side A.
- Step 6** If AD-xB-xx.x cards are installed on Side B, complete the [DLP-G87 Verifying the AD-xB-xx.x Output Express Power](#) for each Side B card. If not, continue with step 7.
- Note** If AD-xB-xx.x and AD-xC-xx.x cards are both installed in one direction, the received express channels will go into the AD-xB-xx.x cards first, then into the AD-xC-xx.x cards.
- Step 7** If AD-xC-xx.x cards are installed on Side B, complete the [DLP-G88 Verifying the AD-xC-xx.x Output Express Power](#) task for each Side B card. If not, continue with step 8.
- Step 8** If AD-xC-xx.x cards are installed on Side A, complete the [DLP-G271 Verifying the AD-xC-xx.x Output Common Power](#) task for each Side A card. If not, continue with step 9.
- Step 9** If AD-xB-xx.x cards are installed on Side A, complete the [DLP-G272 Verifying the AD-xB-xx.x Output Common Power](#) task for each Side A card. If not, continue with step 10.
- Step 10** Complete the [DLP-G83 Verifying the OSC-CSM Power on OADM Nodes](#) task for the OSC-CSM card installed on Side A.
- Step 11** Complete the ["DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power"](#) task for the OPT-PRE card installed on Side B.
- Step 12** Repeat steps 6 through 11 for the AD-xB-xx.x and AD-xC-xx.x cards along the Side A-to-Side B direction.
- Step 13** Return to your originating procedure (NTP).
- 

## DLP-G83 Verifying the OSC-CSM Power on OADM Nodes

|                                |                                                          |
|--------------------------------|----------------------------------------------------------|
| <b>Purpose</b>                 | This task verifies the OSC-CSM card power on OADM nodes. |
| <b>Tools/Equipment</b>         | None                                                     |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a>                     |
| <b>Required/As Needed</b>      | As needed                                                |

|                       |                  |
|-----------------------|------------------|
| <b>Onsite/Remote</b>  | Onsite or remote |
| <b>Security Level</b> | Superuser only   |

### Procedure

- 
- Step 1** Display the OSC-CSM card in card view.
- Step 2** Click the **Provisioning > Optical Line > Parameters** tabs.
- Step 3** Verify that the Power value for Port 3 is higher than the default no-power value of –30 dBm. The calculated expected power value for Port 3 is:  
Pout COM TX of last AD-xy-xx.x – IL02 OSC-CSM (COM RX > LINE TX) – 10 dB (bulk attenuator)
- Step 4** Double-check the value.  
**Note** Actual output power is affected by many factors. Always consider the calculated expected power to be a general guideline and not a precise value.
- Step 5** Return to your originating procedure (NTP).
- 

## DLP-G94 Verifying Add and Drop Connections on an OADM Node with OSC-CSM Cards

|                                |                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task verifies the add and drop channel connections for an OADM node with OSC-CSM cards installed. |
| <b>Tools/Equipment</b>         | A tunable laser or a TXP_MR_10E_C card                                                                 |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a>                                                                   |
| <b>Required/As Needed</b>      | As needed                                                                                              |
| <b>Onsite/Remote</b>           | Onsite                                                                                                 |
| <b>Security Level</b>          | Superuser only                                                                                         |

### Procedure

- 
- Step 1** Based on the Cisco TransportPlanner site configuration file, tune the tunable laser or TXP\_MR\_10E\_C card to a wavelength (belonging to the 100-GHz ITU-T grid) of the channel running on the first add path of the first Side A AD-xC-xx.x or Side A 4MD-xx.x card on the Side B-to-Side A direction. Refer to the tunable

laser manufacturer's documentation or the ["DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing"](#) task.

- Step 2** Connect the tunable laser transmitter or the TXP\_MR\_10E\_C card DWDM TX port to the corresponding 15xx.x RX port (on the card front panel) of the Side A AD-xC-xx.x or 4MD-xx.x card.
- Step 3** Verify the Side A AD-xC-xx.x or 4MD-xx.x card (Side B-to-Side A):
- Display the Side A AD-xC-xx.x or 4MD-xx.x card in card view.
  - Click the **Provisioning > Optical Chn > Parameters** tabs.
  - Change the administrative state of the CHAN RX port to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** for the channel related to the wavelength selected on the tunable laser.
  - Verify that the Power value of the CHAN RX port reaches the provisioned set point (VOA Power Ref).
- Step 4** Complete the ["DLP-G80 Verifying the OPT-PRE Amplifier Laser and Power"](#) task on the Side A OPT-PRE amplifier to verify that the added wavelength turns on the laser.
- Step 5** If the add connection uses a 4MD-xx.x card, continue with [Step 6](#). If the add connection uses an AD-xC-xx.x card, move to [Step 10](#).
- Step 6** Verify the Side A AD-xB-xx.x card:
- Display the Side A AD-xB-xx.x card in card view.
  - Click the **Provisioning > Optical Band > Parameters** tabs.
  - Change the administrative state of the BAND TX port to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** for the channel related to the wavelength selected on the tunable laser.
  - Verify that the Power value of the BAND TX port is higher than the default no-power value of -30 dBm.
- Step 7** Display the related AD-xB-xx.x card (Side A-to-Side B direction) in card view.
- Step 8** Change the administrative state of the drop BAND TX port related to the wavelength selected on the tunable laser to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)**.
- Step 9** (Optional) Connect a power meter to the proper 15xx.xx TX port on the front panel (the dual port compared with the port where the tunable laser is connected). Verify that the physical optical power value from that port is consistent with the value displayed on the Provisioning > Optical Chn > Parameters tab for the proper CHAN TX power value, +/- 0.5 dB.
- Step 10** Verify the Side A AD-xC-xx.x (Side A-to-Side B) card:
- Display the Side A AD-xC-xx.x card in card view.
  - Click the **Provisioning > Optical Chn > Parameters** tabs.
  - Verify that the Power value of the CHAN TX port is higher than the default no-power value of -35 dBm.
  - Display the Side B AD-xC-xx.x card in card view.
  - Click the **Provisioning > Optical Chn > Parameters** tabs.
  - Verify that the power value for the CHAN TX port is higher than the default no-power value of -35 dBm.
  - If the AD-xC-xx.x card is an AD-4C-xx.x card, a VOA (applied to all four channels) is installed along the drop path and needs to be activated in [Step h](#).
  - Change the administrative state of the CHAN TX port related to the wavelength selected on the tunable laser to **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)**. Click **Apply**.
  - Perform the output power check.
- Step 11** (Optional) Connect a power meter to the proper 15xx.xx TX port on the front panel (the dual port compared with the port where the tunable laser is connected). Verify that the physical optical power value from that port

is consistent with the value on Provisioning > Optical Chn > Parameters tab for the proper CHAN TX power value, +/- 0.5 dB.

- Step 12** Repeat steps 10 through 11 for all add paths of any Side A AD-xC-xx.x cards along the Side B-to-Side A direction.
- Step 13** Remove the loopback on the Side A OSC-CSM card.
- Step 14** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 15** Click **Launch ANS**.
- Step 16** Create a loopback on the Side B OSC-CSM card by connecting the OSC-CSM LINE RX and LINE TX ports using a patchcord and 10-dB bulk attenuator.
- Step 17** Verify that the OSC link becomes active on the Side A OSC-CSM card. (The OSC termination must be already provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Note** Due to the OSC signal loopback, an EOC Termination Failure alarm might be raised on ANSI shelves.
- Step 18** If the OSC link becomes active, continue with Step 19. If the OSC link does not turn up, perform the following troubleshooting steps:
- Remove the 10-dB bulk attenuator between the LINE TX and LINE RX connection. If the OSC link becomes active, continue with Step 19. If not, continue with Step b.
  - Modify the OSC Fail Low thresholds. Click the **Provisioning > Optical Line > Optics Thresholds** tabs and change the Port 6 opwrMin (minimum power) to -40 dBm.
  - Modify the COM TX Fail Low Threshold. Change the Port 3 opwrMin (minimum power) to -30 dBm.
  - If the OSC link turns up, continue with Step 19. If it does not turn up, replace the OSC-CSM card.
- Step 19** Check the site configuration file from Cisco TransportPlanner and identify the wavelength (belonging to the 100 Ghz ITU-T grid) of the channel running on the first add path of the first AD-xC-xx.x or 4MD-xx.x card on the Side A-to-Side B direction.
- Step 20** Connect the tunable laser to the corresponding 15xx.x RX port (on the card front panel) of the Side B AD-xC-xx.x or Side B 4MD-xx.x card.
- Step 21** Repeat Steps 3 through 20, applying the steps to the Side B-to-Side A direction.
- Step 22** Restore the default administrative state (IS,AINS/Unlocked,automaticInService) on all the ports previously set to **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI).
- Step 23** Complete the [NTP-G37 Running Automatic Node Setup](#) task to recover the correct node configuration.
- Step 24** Return to your originating procedure (NTP).
-

# NTP-G50 Performing the Passive OADM Node Acceptance Test on a Symmetric Node with OSC-CSM Cards

|                                |                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure checks the integrity of all the optical connections inside an OADM node with OSC-CSM cards and no OPT-BST or OPT-BST-E cards installed on Side B and Side A of the shelf. Three connection types are tested: <ul style="list-style-type: none"> <li>• Express</li> <li>• Pass-through</li> <li>• Add/Drop</li> </ul> |
| <b>Tools/Equipment</b>         | A tunable laser or a TXP_MR_10E_C card<br>An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                    |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">Turn Up a Node</a>                                                                                                                                                                                                                                                              |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                           |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                              |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                      |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- 
- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms

appear, investigate and resolve them before continuing. Refer to the Cisco ONS 15454 DWDM Troubleshooting Guide for procedures.

- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all statuses under Link Status are Success - Changed or Success - Unchanged. If not, complete the [NTP-G37 Running Automatic Node Setup](#) task.
- Step 4** Check the Cisco TransportPlanner site configuration file to verify the presence of a dropped or added bands (including four channels at 100 GHz) configured in pass-through mode in either direction.
- Note** Configuring a band in pass-through mode means that the band is dropped in one direction by an AD-xB-xx.x card on one side (Side B or Side A) of the node, then added by another AD-xB x.xx card on the opposite side in the same direction. The band is not terminated inside the node.
- Step 5** If no bands are configured in pass-through mode, continue with Step 7. If a band is configured in pass-through mode, mark it and skip the related optical test for the express, add, and drop sections. Band pass-through connections are verified separately.
- Step 6** Check the site configuration file from Cisco TransportPlanner to verify the presence of dropped or added channels configured in pass-through mode in either direction.
- Note** Configuring a channel in pass-through mode means that the channel is dropped in one direction by an AD-xC-xx.x card on one side (Side B or Side A) of the node, then added by another AD-xC-x.xx card on the opposite side in the same direction. The channel is not terminated inside the node.
- Step 7** If no channels are configured in pass-through mode, continue with step 8. If a channel is configured in pass-through mode, mark it and skip the related optical test for the express, add, and drop sections. Channel pass-through connections are verified separately.
- Step 8** Create a loopback on the Side A OSC-CSM card by connecting the LINE TX port to the LINE RX port using a patchcord and 10-dB bulk attenuator.
- Step 9** Verify that the OSC link becomes active on the Side A OSC-CSM card. (The OSC termination must be already provisioned. If not, complete the [NTP-G38 Provisioning OSC Terminations](#) task.)
- Note** Due to the OSC signal loopback, an EOC Termination Failure alarm might be raised on ANSI shelves.
- Step 10** If the OSC link becomes active, continue with step 11. If the OSC link does not turn up, perform the following troubleshooting steps:
- Remove the 10-dB bulk attenuator between the LINE TX and LINE RX connection. If the OSC link becomes active, continue with [Step 11](#). If not, continue with [Step b](#).
  - Modify the OSC Fail Low thresholds. Click the **Provisioning > Optical Line > Optics Thresholds** tabs and change the Port 6 opwrMin (minimum power) to -40 dBm.
  - Modify the COM TX Fail Low Threshold. Change the Port 3 opwrMin (minimum power) to -30 dBm.
  - If the OSC link turns up, continue with step 11. If it does not turn up, replace the OSC-CSM card.
- Step 11** If the node has express bands or channels, complete the [DLP-G86 Verifying Express Channel Connections on an OADM Node with OSC-CSM Cards](#) task. If the node does not have express bands or channels, continue with step 12.
- Step 12** If connections configured in pass-through mode are present (noted in Steps 5 through 7), complete the [DLP-G89 Verifying OADM Node Pass-Through Channel Connections](#) “DLP-G89 Verifying OADM Node Pass-Through Channel Connections” task. If not, continue with step 13.
- Step 13** If connections have add/drop connections, complete the [DLP-G94 Verifying Add and Drop Connections on an OADM Node with OSC-CSM Cards](#) task.
- Stop. You have completed this procedure**
-

# NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test

|                                |                                                                                                                                                                                               |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure checks the insertion loss for a four-degree or eight-degree patch panel.                                                                                                       |
| <b>Tools/Equipment</b>         | 1 fully-tunable transponder or tunable laser source with an LC patchcord<br>1 optical power meter with LC input connector<br>1 MPO-LC multicable (LC if the optical power meter has LC input) |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• The mesh patch panel must be installed.</li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul>                                                   |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                     |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                        |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turn Up a Node](#) chapter, they can be used for this procedure. No additional cabling changes are needed.

## Procedure

**Step 1** From the View menu, choose **Go to Network View**.

**Step 2** Click the **Alarms** tab.

- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
- Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.

Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

- Step 3** If you are installing a TXP\_MR\_10E\_C card, complete the [“DLP-G358 Provisioning TXP\\_MR\\_10E\\_L and TXP\\_MR\\_10E\\_C Cards for Acceptance Testing”](#) task.
- Step 4** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder to a wavelength not used in any of the sides already carrying traffic (1530.33 nm, for example).
- Step 5** Complete the [DLP-G433 Recording Transponder Optical Power](#) task.
- Step 6** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 7** Connect the transponder to the COM-RX A port of the four-degree or eight-degree patch panel.
- Step 8** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 9** Verify the COM-RX port power results for Side A ([Table 2: From COM-RX Side A Verification](#)).

**Table 2: From COM-RX Side A Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |
| TEST ACCESS TX                            | <a href="#">Table 11: Side A Power Verification</a> |

- Step 10** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 11** Connect the transponder to the COM-RX B port of the four-degree or eight-degree patch panel.
- Step 12** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 13** Verify the COM-RX port power results for Side B ([Table 3: From COM-RX Side B Verification](#)).

**Table 3: From COM-RX Side B Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |
| TEST ACCESS TX                            | <a href="#">Table 12: Side B Power Verification</a> |

- Step 14** In card view for the transponder card, click the **Provisioning** > **Line** tabs and choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 15** Connect the transponder to the COM-RX C port of the four-degree or eight-degree patch panel.
- Step 16** In card view for the transponder card, click the **Provisioning** > **Line** tabs and choose **IS** (ANSI) or **Unlocked** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 17** Verify the COM-RX port power results for Side C ([Table 4: From COM-RX Side C Verification](#)).

**Table 4: From COM-RX Side C Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| TAP TX                                    | <a href="#">Table 13: Side C Power Verification</a> |

- Step 18** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 19** Connect the transponder to the COM-RX D port of the four-degree or eight-degree patch panel.
- Step 20** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS** (ANSI) or **Unlocked** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 21** Verify the COM-RX port power results for Side D ([Table 5: From COM-RX Side D Verification](#)).

**Table 5: From COM-RX Side D Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |
| TEST ACCESS TX                            | <a href="#">Table 14: Side D Power Verification</a> |

- Step 22** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 23** If you are testing a four-degree patch panel, continue with [Step 76](#). If you are testing an eight-degree patch panel, continue with [Step 24](#).
- Step 24** Connect the transponder to the COM-RX E port of the eight-degree patch panel.
- Step 25** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS** (ANSI) or **Unlocked** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 26** Verify the COM-RX port power results for Side E ([Table 6: From COM-RX Side E Verification](#)).

**Table 6: From COM-RX Side E Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |
| TEST ACCESS TX                            | <a href="#">Table 15: Side E Power Verification</a> |

- Step 27** In card view for the transponder card, click the **Provisioning** > **Line** tabs and choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 28** Connect the transponder to the COM-RX F port of the eight-degree patch panel.
- Step 29** In card view for the transponder card, click the **Provisioning** > **Line** tabs and choose **IS** (ANSI) or **Unlocked** (ETSI) from the Admin State drop-down list. Click **Apply**.
- Step 30** Verify the COM-RX port power results for Side F ([Table 7: From COM-RX Side F Verification Table](#)).

**Table 7: From COM-RX Side F Verification Table**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| TEST ACCESS TX                            | <a href="#">Table 16: Side F Power Verification</a> |

- Step 31** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 32** Connect the transponder to the COM-RX G port of the eight-degree patch panel.
- Step 33** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 34** Verify the COM-RX port power results for Side G ([Table 8: From COM-RX Side G Verification](#)).

**Table 8: From COM-RX Side G Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 10: Same Side Verification</a>    |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 18: Side H Power Verification</a> |
| TEST ACCESS TX                            | <a href="#">Table 17: Side G Power Verification</a> |

- Step 35** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 36** Connect the transponder to the COM-RX H port of the eight-degree patch panel.
- Step 37** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 38** Verify the COM-RX port power results for Side H ([Table 9: From COM-RX Side H Verification](#)).

**Table 9: From COM-RX Side H Verification**

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP A TX                                  | <a href="#">Table 11: Side A Power Verification</a> |

| Connect MPO Connector to Patch Panel Port | Refer to...                                         |
|-------------------------------------------|-----------------------------------------------------|
| EXP B TX                                  | <a href="#">Table 12: Side B Power Verification</a> |
| EXP C TX                                  | <a href="#">Table 13: Side C Power Verification</a> |
| EXP D TX                                  | <a href="#">Table 14: Side D Power Verification</a> |
| EXP E TX (eight-degree patch panel only)  | <a href="#">Table 15: Side E Power Verification</a> |
| EXP F TX (eight-degree patch panel only)  | <a href="#">Table 16: Side F Power Verification</a> |
| EXP G TX (eight-degree patch panel only)  | <a href="#">Table 17: Side G Power Verification</a> |
| EXP H TX (eight-degree patch panel only)  | <a href="#">Table 10: Same Side Verification</a>    |
| TEST ACCESS TX                            | <a href="#">Table 18: Side H Power Verification</a> |

**Step 39** In card view for the transponder card, click the **Provisioning** > **Line** tabs and choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.

**Step 40** Connect the transponder to the test access RX port of the four- or eight-degree patch panel.

**Note** There are two local access RX ports on the 8-degree patch panel. Select the left Local Access port for testing.

- Step 41** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 42** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP A TX port of the four- or eight-degree patch-panel.
- Step 43** Connect the optical power meter to the fan-out cable 1.
- Step 44** Collect the actual reading from the optical power meter.
- Step 45** Verify the IL is less than 11dB for an 8-degree patch panel or less than 8dB for a 4-degree patch panel.
- Step 46** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP B TX port of the four- or eight-degree patch panel.
- Step 47** Connect the optical power meter to the fan-out cable 2.
- Step 48** Collect the actual reading from the optical power meter.
- Step 49** Verify the IL is less than 11dB for an 8-degree patch panel or less than 8dB for a 4-degree patch panel.
- Step 50** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP C TX port of the four- or eight-degree patch panel.
- Step 51** Connect the optical power meter to the fan-out cable 3.
- Step 52** Collect the actual reading from the optical power meter.
- Step 53** Verify the IL is less than 11dB for an 8-degree patch panel or less than 8dB for a 4-degree patch panel.
- Step 54** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP D TX port of the four- or eight-degree patch panel.
- Step 55** Connect the optical power meter to the fan-out cable 4.
- Step 56** Collect the actual reading from the optical power meter.
- Step 57** Verify the IL is less than 11dB for an 8-degree patch panel or less than 8dB for a 4-degree patch panel.
- Step 58** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP E TX port of the four- or eight-degree patch panel.
- Step 59** Connect the optical power meter to the fan-out cable 5.
- Step 60** Collect the actual reading from the optical power meter.
- Step 61** Verify the IL is less than 11dB for an 8-degree patch panel.
- Step 62** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP F TX port of the four- or eight-degree patch panel.
- Step 63** Connect the optical power meter to the fan-out cable 6.
- Step 64** Collect the actual reading from the optical power meter.
- Step 65** Verify the IL is less than 11dB for an 8-degree patch panel.
- Step 66** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP G TX port of the four- or eight-degree patch panel.
- Step 67** Connect the optical power meter to the fan-out cable 7.
- Step 68** Collect the actual reading from the optical power meter.
- Step 69** Verify the IL is less than 11dB for an 8-degree patch panel.
- Step 70** Connect the MPO connector of the MPO-LC (FC or SC) multifiber fan-out to EXP H TX port of the four- or eight-degree patch panel.
- Step 71** Connect the optical power meter to the fan-out cable 8.
- Step 72** Collect the actual reading from the optical power meter.
- Step 73** Verify the IL is less than 11dB for an 8-degree patch panel.
- Step 74** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **OOS,DSBLD (ANSI)**

or **Locked,disabled** (ETSI) from the Admin State drop-down list. Click **Apply**.

**Step 75** Repeat Steps 40 through 74 for the right side Local Access RX port.

**Step 76** Complete the [NTP-G188 Performing the Native Mesh Node Acceptance Test](#) task. The tables below are used for verification in Steps 9 through 38 of this procedure.

**Table 10: Same Side Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | No power                                  | No power                                 |
| Cable 2                                  | No power                                  | No power                                 |
| Cable 3                                  | No power                                  | No power                                 |
| Cable 4                                  | No power                                  | No power                                 |
| Cable 5 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 6 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 7 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 8 (eight-degree patch panel only)  | No power                                  | —                                        |

**Table 11: Side A Power Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | IL < 11 dB                                | IL < 8 dB                                |
| Cable 2                                  | No power                                  | No power                                 |
| Cable 3                                  | No power                                  | No power                                 |
| Cable 4                                  | No power                                  | No power                                 |
| Cable 5 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 6 (eight-degree patch panel only)  | No power                                  | —                                        |

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 7 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 8 (eight-degree patch panel only)  | No power                                  | —                                        |

**Table 12: Side B Power Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | No power                                  | No power                                 |
| Cable 2                                  | IL < 11 dB                                | IL < 8 dB                                |
| Cable 3                                  | No power                                  | No power                                 |
| Cable 4                                  | No power                                  | No power                                 |
| Cable 5 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 6 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 7 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 8 (eight-degree patch panel only)  | No power                                  | —                                        |

**Table 13: Side C Power Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | No power                                  | No power                                 |
| Cable 2                                  | No power                                  | No power                                 |
| Cable 3                                  | IL < 11 dB                                | IL < 8 dB                                |
| Cable 4                                  | No power                                  | No power                                 |

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 5 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 6 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 7 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 8 (eight-degree patch panel only)  | No power                                  | —                                        |

**Table 14: Side D Power Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | No power                                  | No power                                 |
| Cable 2                                  | No power                                  | No power                                 |
| Cable 3                                  | No power                                  | No power                                 |
| Cable 4                                  | IL < 11 dB                                | IL < 8 dB                                |
| Cable 5 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 6 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 7 (eight-degree patch panel only)  | No power                                  | —                                        |
| Cable 8 (eight-degree patch panel only)  | No power                                  | —                                        |

**Table 15: Side E Power Verification**

| Optical Power Meter Connected to Fan Out | Power Result for Eight-Degree Patch Panel | Power Result for Four-Degree Patch Panel |
|------------------------------------------|-------------------------------------------|------------------------------------------|
| Cable 1                                  | No power                                  | No power                                 |
| Cable 2                                  | No power                                  | No power                                 |

| <b>Optical Power Meter Connected to Fan Out</b> | <b>Power Result for Eight-Degree Patch Panel</b> | <b>Power Result for Four-Degree Patch Panel</b> |
|-------------------------------------------------|--------------------------------------------------|-------------------------------------------------|
| Cable 3                                         | No power                                         | No power                                        |
| Cable 4                                         | No power                                         | No power                                        |
| Cable 5 (eight-degree patch panel only)         | IL < 11 dB                                       | —                                               |
| Cable 6 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 7 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 8 (eight-degree patch panel only)         | No power                                         | —                                               |

**Table 16: Side F Power Verification**

| <b>Optical Power Meter Connected to Fan Out</b> | <b>Power Result for Eight-Degree Patch Panel</b> | <b>Power Result for Four-Degree Patch Panel</b> |
|-------------------------------------------------|--------------------------------------------------|-------------------------------------------------|
| Cable 1                                         | No power                                         | No power                                        |
| Cable 2                                         | No power                                         | No power                                        |
| Cable 3                                         | No power                                         | No power                                        |
| Cable 4                                         | No power                                         | No power                                        |
| Cable 5 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 6 (eight-degree patch panel only)         | IL < 11 dB                                       | —                                               |
| Cable 7 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 8 (eight-degree patch panel only)         | No power                                         | —                                               |

**Table 17: Side G Power Verification**

| <b>Optical Power Meter Connected to Fan Out</b> | <b>Power Result for Eight-Degree Patch Panel</b> | <b>Power Result for Four-Degree Patch Panel</b> |
|-------------------------------------------------|--------------------------------------------------|-------------------------------------------------|
| Cable 1                                         | No power                                         | No power                                        |
| Cable 2                                         | No power                                         | No power                                        |
| Cable 3                                         | No power                                         | No power                                        |
| Cable 4                                         | No power                                         | No power                                        |
| Cable 5 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 6 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 7 (eight-degree patch panel only)         | IL < 11 dB                                       | —                                               |
| Cable 8 (eight-degree patch panel only)         | No power                                         | —                                               |

**Table 18: Side H Power Verification**

| <b>Optical Power Meter Connected to Fan Out</b> | <b>Power Result for Eight-Degree Patch Panel</b> | <b>Power Result for Four-Degree Patch Panel</b> |
|-------------------------------------------------|--------------------------------------------------|-------------------------------------------------|
| Cable 1                                         | No power                                         | No power                                        |
| Cable 2                                         | No power                                         | No power                                        |
| Cable 3                                         | No power                                         | No power                                        |
| Cable 4                                         | No power                                         | No power                                        |
| Cable 5 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 6 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 7 (eight-degree patch panel only)         | No power                                         | —                                               |
| Cable 8 (eight-degree patch panel only)         | IL < 11 dB                                       | —                                               |

Stop. You have completed this procedure.

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## DLP-G432 Setting the Transponder Wavelength

|                                |                                                                               |
|--------------------------------|-------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task tunes transponder wavelength.                                       |
| <b>Tools/Equipment</b>         | Fully C-band tunable transponder or tunable laser source with an LC patchcord |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a>                                          |
| <b>Required/As Needed</b>      | As needed                                                                     |
| <b>Onsite/Remote</b>           | Onsite                                                                        |
| <b>Security Level</b>          | Superuser only                                                                |

### Procedure

---

- Step 1** In card view, display the transponder card.
  - Step 2** Click the **Provisioning > Line > Wavelength Trunk Settings** tabs.
  - Step 3** In the Wavelength field, choose the desired wavelength (C-Band, odd) from the drop-down list.
  - Step 4** Click **Apply**.
  - Step 5** Click the **Provisioning > Pluggable Port Module > Pluggable Port Module** tabs and click **Create** to preprovision a pluggable port module (PPM), if necessary.
  - Step 6** Click **Ok**, then **Apply**.
  - Step 7** Return to your originating procedure (NTP).
- 

## DLP-G433 Recording Transponder Optical Power

|                        |                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>         | This task checks and records optical power.                                                          |
| <b>Tools/Equipment</b> | Fully C-band tunable transponder or tunable laser source with an LC patchcord<br>Optical power meter |

|                                |                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br>ANS successfully completed<br>All sides completely wired (including patch panels) |
| <b>Required/As Needed</b>      | As needed                                                                                                                 |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                    |
| <b>Security Level</b>          | Superuser only                                                                                                            |

### Procedure

- 
- Step 1** Connect the optical power meter to the transponder output.
- Step 2** Display card view for the transponder card.
- Step 3** Click the **Provisioning > Line** tabs, and choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the Admin State drop-down list.
- Step 4** Record the optical power meter value.
- Step 5** Choose **OOS,DSBLD** (ANSI) or **Locked,disabled** (ETSI) from the Admin State drop-down list.
- Step 6** Disconnect the optical power meter from the TX port of the transponder card.
- Step 7** Return to your originating procedure (NTP).
- 

## NTP-G187 Performing the Multiring Site Acceptance Test

|                        |                                                                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>         | This procedure checks the connections and the output power values for a multiring node. A multiring node connects two existing in-service two-sides ROADMs with two sides (each equipped with MMU cards).                  |
| <b>Tools/Equipment</b> | Fully C-band tunable transponder or tunable laser source<br>1 15-dB LC attenuator<br>1 optical power meter with LC input connector<br>1 MPO-LC multicable (LC if the optical power meter has LC input)<br>3 LC-LC adapters |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• All sides must be completely wired (including patch panels), except the connections with the MMU cards in the existing in-service ROADM node; for more information, see <a href="#">Turning Up a Node</a>.</li> <li>• <a href="#">NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test</a> task (as needed).</li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                                    |



**Note** Optical power measurements require either a tunable laser or a multirate transponder to generate the proper optical wavelength. If multirate transponders were installed during completion of [Turning Up a Node](#), they can be used for this procedure. No additional cabling changes are needed.

## Procedure

- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.  
Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.
- Step 3** Insert a full C-band tunable transponder card into an available slot.
- Step 4** Plug a 15 dB LC attenuator to the TX port of the transponder card.
- Step 5** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder to a wavelength yyyy.yy (1530.33 nm, for example).
- Step 6** Complete the [DLP-G433 Recording Transponder Optical Power](#) task.
- Step 7** Disconnect the optical power meter from the TX port of the transponder card.
- Step 8** Make the following connections:
- Connect the transponder card output port (with the 15 dB attenuator) to the COM-RX port of the 40-WXC-C card on Side A.
  - Connect the optical power meter to the COM-TX port of the 40-WXC-C card on Side A.
  - Connect, using an LC-LC adapter, the patchcord from the COM-TX port to the patchcord in the COM-RX port of the Side B 40-WXC-C card.
  - Connect, using an LC-LC adapter, the patchcord from the COM-TX port to the patchcord in the COM-RX port of the Side C 40-WXC-C card.

- e) Connect, using an LC-LC adapter, the patchcord from the COM-TX port to the patchcord in the COM-RX port of the Side D 40-WXC-C card.

**Step 9** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs. Complete the following:

- a) Record the values of the following parameters:

- Power on the COM-TX port of the preamplifier on Side A
- Power on the COM-RX port of the 40-WXC-C card on Side A
- Power on the COM-TX port of the 40-WXC-C card on Side A
- Power Fail Low Th on the COM-RX port of the preamplifier on Side A
- Power on the COM-TX port of the preamplifier on Side B
- Power on the COM-RX port of the 40-WXC-C card on Side B
- Power on the COM-TX port of the 40-WXC-C card on Side B
- Power Fail Low Th on the COM-RX port of the preamplifier on Side B
- Power on the COM-TX port of the preamplifier on Side C
- Power on the COM-RX port of the 40-WXC-C card on Side C
- Power on the COM-TX port of the 40-WXC-C card on Side C
- Power Fail Low Th on the COM-RX port of the preamplifier on Side C
- Power on the COM-TX port of the preamplifier on Side D
- Power on the COM-RX port of the 40-WXC-C card on Side D
- Power on the COM-TX port of the 40-WXC-C card on Side D
- Power Fail Low Th on the COM-RX port of the preamplifier on Side D

- b) Change the values of the parameters as follows:

- Power on the COM-TX port of the preamplifier on Side A = 1 dBm
- Power on the COM-RX port of the 40-WXC-C card on Side A = -15 dBm
- Power on the COM-TX port of the 40-WXC-C card on Side A = -15 dBm
- Power Fail Low Th on the COM-RX port of the preamplifier on Side A = -30 dBm
- Power on the COM-TX port of the preamplifier on Side B = 1 dBm
- Power on the COM-RX port of the 40-WXC-C card on Side B = -15 dBm
- Power on the COM-TX port of the 40-WXC-C card on Side B = -15 dBm
- Power Fail Low Th on the COM-RX port of the preamplifier on Side B = -30 dBm
- Power on the COM-TX port of the preamplifier on Side C = 1 dBm
- Power on the COM-RX port of the 40-WXC-C card on Side C = -15 dBm
- Power on the COM-TX port of the 40-WXC-C card on Side C = -15 dBm
- Power Fail Low Th on the COM-RX port of the preamplifier on Side C = -30 dBm

- Power on the COM-TX port of the preamplifier on Side D = 1 dBm
- Power on the COM-RX port of the 40-WXC-C card on Side D = -15 dBm
- Power on the COM-TX port of the 40-WXC-C card on Side D = -15 dBm
- Power Fail Low Th on the COM-RX port of the preamplifier on Side D = -30 dBm

- Step 10** In card view, display the transponder card and click the **Provisioning > Line** tabs. Choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list.
- Step 11** In card view, display the 40-WXC-C card for Side A and complete the following:
- Click the **Provisioning > Optical Line > Parameters** tabs. Record the Power value of the COM-RX port.
  - Verify that the COM-RX value matches the transponder card optical power meter value recorded in the [DLP-G433 Recording Transponder Optical Power](#) task (+/-1dB).
  - Click the **Inventory > Info** tabs and record the CRX -> EXP insertion loss.
  - Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the EXP-TX port.
  - Verify that the EXP-TX port power value = (COM-RX port power value in Step a) – (CRX -> EXP insertion loss value in Step d) (+/- 1dB).
- Step 12** In card view, display the OPT-AMP-17 card for Side A and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 13** In card view, display the 40-WXC-C card for Side B and complete the following:
- Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
  - Complete the [DLP-G436 Recording the 40-WXC-C Power Value](#) task.
- Step 14** In card view, display the OPT-AMP-17 card for Side B and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 15** In card view, display the 40-WXC-C card for Side C and complete the following:
- Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
  - Complete the [DLP-G436 Recording the 40-WXC-C Power Value](#) task.
- Step 16** In card view, display the OPT-AMP-17 card for Side C and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 17** In card view, display the 40-WXC-C card for Side D and complete the following:
- Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.

- b) Complete the [DLP-G436 Recording the 40-WXC-C Power Value](#) task.
- Step 18** In card view, display the OPT-AMP-17 card for Side D and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 19** In card view, display the 40-WXC-C card for Side A and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 20** In card view, display the OPT-AMP-17 card for Side A and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 21** Record the optical power meter value and verify that the optical power meter value matches the value recorded in the [DLP-G433 Recording Transponder Optical Power](#) task (+/- 1dB).
- Step 22** In card view, display the 40-WXC-C card for Side A. Click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides B, C, and D of the 40-WXC-C card.
- Step 23** To test all wavelengths, repeat Steps [5](#), [10](#), [17](#), and [19](#) for all supported wavelengths.
- Step 24** In card view, display the transponder card and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list.
- Step 25** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port for Side B of the 40-WXC-C card.
- Step 26** Connect, using an LC-LC adapter, the patchcord from the COM-TX port with the patchcord in the COM-RX port for Side A of the 40-WXC-C card.
- Step 27** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder card to the wavelength set in [Step 5](#).
- Step 28** Connect the transponder card output port (with the 15-dB-attenuator) to the COM-RX port of the 40-WXC-C card for Side B.
- Step 29** In card view, display the transponder card. Click the **Provisioning > Linet** tabs, and choose **IS (ANSI)** or **Unlocked(ETSI)** from the Admin State drop-down list.
- Step 30** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Sides C and D of the 40-WXC-C card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 31** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Side B of the 40-WXC-C card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 3.
- Step 32** In card view, display the 40-WXC-C card for Side B. Click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides A, C, and D.
- Step 33** To test all wavelengths, repeat Steps [27](#) through [32](#) (omit [Step 28](#)) for all supported wavelengths.
- Step 34** In card view, display the transponder card. Click the **Provisioning > Line** tabs, and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list.
- Step 35** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side C of the 40-WXC-C card.
- Step 36** Connect, using an LC-LC adapter, the patchcord from the COM-TX port to the patchcord in the COM-RX port for Side B of the 40-WXC-C card.
- Step 37** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder card to the wavelength set in [Step 5](#).
- Step 38** Connect the transponder card output port (with the 15-dB attenuator) to the COM-RX port of the 40-WXC-C card for Side C.
- Step 39** In card view for the transponder card, click the **Provisioning > Line** tabs and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list.
- Step 40** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Sides A and D of the 40-WXC-C

- card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 3.
- Step 41** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Side C of the 40-WXC-C card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 4.
- Step 42** In card view, display the 40-WXC-C card and click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides A, B, and D.
- Step 43** To test all wavelengths, repeat Steps 37 through 42 (omit Step 38) for all supported wavelengths.
- Step 44** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side D of the 40-WXC-C card.
- Step 45** Connect, using an LC-LC adapter, the patchcord from the COM-TX port to the patchcord in the COM-RX of Side C of the 40-WXC-C card.
- Step 46** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder card to the desired wavelength for testing.
- Step 47** Connect the transponder card output port (with the 15-dB attenuator) to the COM-RX port of the 40-WXC-C card of Side D.
- Step 48** In card view, display the transponder card. Click the **Provisioning > Line** tabs, and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list.
- Step 49** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Sides A and B of the 40-WXC-C card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 4.
- Step 50** Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task for Side C of the 40-WXC-C card. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
- Step 51** In card view, display the 40-WXC-C card for Side D. Click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides A, B, and C of the 40-WXC-C card.
- Step 52** To test all wavelengths, repeat Steps 46 through 51 for all supported wavelengths, except Step 47.
- Step 53** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs. Restore the values recorded in [Step 9a](#) for the following parameters:
- Power on the COM-TX port of the preamplifier on Side A
  - Power on the COM-RX port of the 40-WXC-C card on Side A
  - Power on the COM-TX port of the 40-WXC-C card on Side A
  - Power Fail Low Th on the COM-RX port of the preamplifier on Side B
  - Power on the COM-TX port of the preamplifier on Side B
  - Power on the COM-RX port of the 40-WXC-C card on Side B
  - Power on the COM-TX port of the 40-WXC-C card on Side B
  - Power Fail Low Th on the COM-RX port of the preamplifier on Side B
  - Power on the COM-TX port of the preamplifier on Side C
  - Power on the COM-RX port of the 40-WXC-C card on Side C
  - Power on the COM-TX port of the 40-WXC-C card on Side C
  - Power Fail Low Th on the COM-RX port of the preamplifier on Side C
  - Power on the COM-TX port of the pre-amplifier on Side D
  - Power on the COM-RX port of the 40-WXC-C card on Side D

- Power on the COM-TX port of the 40-WXC-C card on Side D
- Power Fail Low Th on the COM-RX port of the preamplifier on Side D

- Step 54** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Click **Launch ANS**.
- Step 55** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side A of the 40-WXC-C card.
- Step 56** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side B of the 40-WXC-C card.
- Step 57** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side C of the 40-WXC-C card.
- Step 58** Restore the connections to the MMU cards of the eight sides using the patchcords tested in this procedure:
- Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side A to the EXP-A-RX port of the MMU in the lowest slot of the upgraded ROADM Node 1.
  - Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side A to the EXP-A-TX port of the MMU in the lowest slot of the upgraded ROADM Node 1.
  - Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side B to the EXP-A-RX port of the MMU in the highest slot of the upgraded ROADM Node 1.
  - Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side B to the EXP-A-TX port of the MMU in the highest slot of the upgraded ROADM Node 1.
  - Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side C to the EXP-A-RX port of the MMU in the lowest slot of the upgraded ROADM Node 2.
  - Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side C to the EXP-A-TX port of the MMU in the lowest slot of the upgraded ROADM Node 2.
  - Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side D to the EXP-A-RX port of the MMU in the highest slot of the upgraded ROADM Node 2.
  - Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side D to the EXP-A-TX port of the MMU in the highest slot of the upgraded ROADM Node 2.
- Stop. You have completed this procedure.**

## DLP-G434 Recording the OPT-AMP-17-C Power Value

|                                |                                                                                                                                                                                          |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task records the power value of the OPT-AMP-17 card.                                                                                                                                |
| <b>Tools/Equipment</b>         | None                                                                                                                                                                                     |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">DLP-G436 Recording the 40-WXC-C Power Value</a><br>ANS successfully completed<br>All sides completely wired (including patch panels) |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                |

|                       |                |
|-----------------------|----------------|
| <b>Onsite/Remote</b>  | Onsite         |
| <b>Security Level</b> | Superuser only |

### Procedure

- Step 1** In card view for the OPT-AMP-17 card for Side x, complete the following:
- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - Verify the COM-RX port power value matches the value of the EXP-TX port of the 40-WXC-C card in the [DLP-G436 Recording the 40-WXC-C Power Value](#) task (+\− 1 dB).
  - Click the **Provisioning > Op. Ampli. Line > Parameters** tabs and record the Total Output Power value of the COM-TX port.
  - Verify that the value is 1 dBm (+\− 1 dB).
- Step 2** Return to your originating procedure (NTP).

## DLP-G435 Setting the 40-WXC-C OCHNC Parameters

|                                |                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task sets the OCHNC parameters for the 40-WXC-C card.                                                                |
| <b>Tools/Equipment</b>         | None                                                                                                                      |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br>ANS successfully completed<br>All sides completely wired (including patch panels) |
| <b>Required/As Needed</b>      | As needed                                                                                                                 |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                    |
| <b>Security Level</b>          | Superuser only                                                                                                            |

### Procedure

- Step 1** In the 40-WXC-C card view for Side x, complete the following:
- Click the **Maintenance > OCHNC > Insert Value** tabs and set the parameters as follows:
    - Target Power (dBm) = −15.0

**Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.

- Input Port = x (EXP-RX) (for x, refer to the step in the originating procedure)
- VOA Attenuation (dB) = 13
- Wavelength = Value set in the originating procedure

b) Click **Apply**.

c) Click **Refresh**. In the Return Value COM-TX on selected Wavelength field, verify that the Actual Power (dBm) is  $-15 \pm 0.5$  dB.

**Step 2** Return to your originating procedure (NTP).

## DLP-G436 Recording the 40-WXC-C Power Value

|                                |                                                                                                                                                                                                                                                             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This task records the power value of the 40-WXC-C card for a multiring configuration.                                                                                                                                                                       |
| <b>Tools/Equipment</b>         | None                                                                                                                                                                                                                                                        |
| <b>Prerequisite Procedures</b> | <a href="#">DLP-G46 Log into CTC</a><br><a href="#">DLP-G433 Recording Transponder Optical Power</a><br><a href="#">DLP-G435 Setting the 40-WXC-C OCHNC Parameters</a><br>ANS successfully completed<br>All sides completely wired (including patch panels) |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                   |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                      |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                              |

### Procedure

**Step 1** In card view for the 40-WXC-C card for Side x, complete the following:

- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-TX port.
- b) Verify that the COM-TX port value matches Return Value COM-TX on selected Wavelength value retrieved in the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task ( $\pm 1$  dB).
- c) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the EXP-TX port.

- d) Click the **Inventory** > **Info** tabs and record the CRX -> EXP insertion loss value.
- e) Verify that the EXP-TX port power value = (COM-TX port power value) – (CRX -> EXP insertion loss value) (+/- 1 dB).

**Step 2** Return to your originating procedure (NTP).

## NTP-G188 Performing the Native Mesh Node Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure checks the power values and the optical connections for a native mesh node. Use this test for both new installations and directional upgrades of native mesh nodes. Use this to also test the installation of a new side <i>n</i> to a node.                                                                                                           |
| <b>Tools/Equipment</b>         | <ul style="list-style-type: none"> <li>• Fully C-band tunable transponder or tunable laser source with an LC patchcord</li> <li>• 1 MPO-LC multicable (LC if the optical power meter has LC input)</li> <li>• 1 LC-LC adapter</li> </ul>                                                                                                                              |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• All sides must be completely fibered (including mesh patch panels); for more information, see <a href="#">Turn Up a Node</a> chapter.</li> <li>• <a href="#">NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test</a> (optional)</li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                             |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                        |

### Procedure

- Step 1** Identify the sides that are already carrying traffic and which sides are going to be tested.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** Click the **Alarms** tab.
  - a) Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
  - b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (An equipment alarm is indicated in the Alarms tab, Cond column as EQPT.) If equipment failure alarms appear, investigate and resolve them before continuing.

Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

- Step 4** Insert a full C-band tunable transponder into an available slot of the side that you want to test (Side A through H, referred to as Side x in this procedure).
- Step 5** Plug a 15-dB LC attenuator into the trunk TX port of the transponder card.
- Step 6** Select a wavelength that is not used on any of the sides for carrying traffic (or 1530.33 nm if it is a new installation). Complete the [DLP-G432 Setting the Transponder Wavelength](#) to tune the transponder for the selected wavelength yyyy.yy.
- Step 7** Connect the optical power meter to the trunk TX port of the transponder card.
- Step 8** Complete the [DLP-G433 Recording Transponder Optical Power](#).
- Step 9** Disconnect the optical power meter from the TX port of the transponder card.
- Step 10** In card view, display the OSC-CSM or OSCM card for Side x and complete the following:
- Click the **Maintenance** > **ALS** tabs and from the OSRI pull-down menu, select **OFF**.
  - From the ALS Mode pull-down menu, select **Disable**.
- Step 11** Make the following connections:
- Connect the transponder output port (with the 15-dB attenuator) to the Line RX port of the booster amplifier (OPT-BST, OPT-BST-E, OPT-AMP-C, OPT-AMP-17-C, or OSC-CSM) of Side x.
  - Connect the optical power meter to the LINE-TX port of the booster amplifier (OPT-BST, OPT-BST-E, OPT-AMP-C, OPT-AMP-17-C, or OSC-CSM) of Side x.
  - Use a fiber to connect the 40-DMX-C TX port to the 40-MUX-C RX port for the selected wavelength yyyy.yy in the 15454-PP-80-LC patch panel for Side x.
- Step 12** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs. Complete the following:
- Record the actual values of the following parameters:
    - Power on the COM-TX port of preamplifier on Side X
    - Power on the COM-RX port of the 40-WXC-C card on Side X
    - Power on the COM-TX port of the 40-WXC-C card on Side X
    - Power on the LINE-TX port of the booster amplifier on Side X
  - Set the previous values of the parameters as follows:
    - Power on the COM-TX port of preamplifier on Side X = +8 dBm
    - Power on the COM-RX port of the 40-WXC-C card on Side X = +8 dBm
    - Power on the COM-TX port of the 40-WXC-C card on Side X = -18 dBm
    - Power on the LINE-TX port of the booster amplifier on Side X = -1 dBm
  - Click **Apply**.
- Step 13** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Port Status** tabs. Click **Launch ANS**.
- Step 14** In card view, display the 40-DMX-C card for Side x and complete the following:
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the VOA Attenuation Ref. value y.
  - Set the VOA Attenuation Calib. to -y.

- c) Choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the Admin State drop-down list.
  - d) Click **Apply**.
- Step 15** In card view, display the 40-MUX-C card for Side x. Click the **Provisioning > Optical Line > Parameters** tabs, and choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the Admin State drop-down list. Click **Apply**.
- Step 16** In card view, display the booster amplifier card for Side x. Click the **Inventory > Info** tabs and record the IL02 (LINE RX->COM TX) insertion loss value.
- Step 17** In card view, display the transponder card and click the **Provisioning > Line** tabs. For trunk port, choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the Admin State drop-down list and click **Apply**.
- Step 18** In card view, display the booster amplifier card for Side x, and complete the following:
- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-TX port.
  - b) Verify the power value of the COM-TX port = (Optical power meter value in [Step 8](#)) – (LINE RX->COM TX insertion loss value read in [Step 16](#)) (+/- 1 dB).
- Step 19** In card view, display the preamplifier card (OPT-PRE, OPT-AMP-C, or OPT-AMP-17C) for Side x and complete the following:
- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - b) Verify that the COM-RX power value matches the value in [Step 18b](#) (+/- 1 dB).
  - c) Click the **Provisioning > Opt. Ampli. Line > Parameters** tabs and record the Total Output Power value of the COM-TX port.
  - d) Verify that the value is +8 dBm (+/- 1 dB).
- Step 20** In card view, display the 40-WXC-C card for Side x and complete the following:
- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - b) Verify that the value matches the COM-TX port power value in [Step 19c](#) (+/- 1dB).
  - c) Click the **Inventory > Info tabs** and record the CRX -> EXP insertion loss.
  - d) Record the CRX -> DROP insertion loss.
  - e) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the EXP-TX port.
  - f) On the same screen, record the Power value of the DROP-TX port.
  - g) Verify that the EXP-TX Power value in [Step 20e](#) = (COM-RX value in [Step 20a](#)) – (CRX -> EXP value in [Step 20c](#)) (+/- 1 dB).
  - h) Verify that the DROP-TX value in [Step 20f](#) = (COM-RX value in [Step 20a](#)) – (CRX -> DROP value in [Step 20d](#)) (+/- 1 dB).
- Step 21** In card view, display the 40-DMX-C card for Side x and complete the following:
- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - b) Verify that the COM-RX power value in Step a matches the value in [Step 20f](#) (+/- 1 dB).
  - c) Click the **Inventory > Info tabs** and record the 1RX -> xTX insertion loss (where x is the channel number associated with yyyy.yy wavelength).
  - d) Click the **Provisioning > Optical Chn > Parameters** tabs and record the Power value of the CHAN-TX port associated with yyyy.yy wavelength.

- e) Verify that the CHAN-TX port Power value = (COM-RX power value in [Step 21a](#)) – (1RX -> xTX insertion loss value in [Step 21c](#)) (+/- 1 dB).

**Step 22** In card view, display the 40-MUX-C card for Side x and complete the following:

- Click the **Provisioning** > **Optical Chn** > **Parameters** tabs and record the Power value of the CHAN-RX port associated with the selected yyyy.yy wavelength.
- Verify that the CHAN-RX value in [Step 22a](#) = (CHAN-TX value in [Step 21d](#)) (+/- 1.5 dB).
- Click the **Inventory** > **Info** tabs and record the xRX -> 1TX insertion loss (where x is the channel number associated with yyyy.yy wavelength).
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs, record the Power value of the COM-TX port.
- Verify that the COM-TX Power value = (CHAN-RX value in [Step 22a](#)) – (yRX -> 1TX value in [Step 22c](#)) (+/- 1 dB).

**Step 23** In card view, display the 40-WXC-C card for Side x and complete the following:

- Click the **Maintenance** > **OCHNC** tabs, and in the Insert Value section, set the available parameters as follows:
  - Target Power (dBm) = -18.0
  - Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.
  - Input port = 9 (ADD-RX)
  - VOA Attenuation (dB) = 13
  - Wavelength = yyyy.yy (wavelength selected in [Step 6](#))
- Click **Apply**.
- In the Return Value COM-TX section on selected Wavelength area, click **Refresh** and verify that the Actual Power (dBm) is the Target Power from [Step 23a](#) +/- 0.5 dB. If the channel does not come up, reduce VOA Attenuation by 5dB in [Step 23a](#) until the target power is reached.
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-TX port.
- Verify that the COM-TX Power value matches the Actual Power value in [Step 23c](#) (+/- 1 dB).

**Step 24** In card view, display the booster amplifier card for Side x, and complete the following:

- Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-RX port.
- Verify COM-RX Power value matches the COM-TX Power value in [Step 23d](#) (+/- 1 dB).
- Click the **Provisioning** > **Opt. Ampli. Line** > **Parameters** tabs and record the Power value of the LINE-TX port.
- Verify that the LINE-TX value matches the power on the LINE-TX port of the booster amplifier on Side x recorded in [Step 12b](#) (+/- 1 dB).
- Record the optical power meter value.
- Verify that the optical power meter value matches the LINE-TX value in [Step 24c](#) (+/- 1 dB).

**Step 25** Select the 40-WXC-C card on Side n where n is A, B, C, D, E, F, G, or H but n is not equal to x, go to the card view and complete the following:

- Click the **Maintenance** > **OCHNC** tabs, and in the Insert Values section, set the available parameters as follows:
  - Target Power (dBm) = -22.0

**Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.

- Input port = x (EXP-RX)
- VOA Attenuation (dB) = 20
- Wavelength = yyyy.yy (wavelength selected in [Step 6](#))

- b) Click **Apply**.
- c) In the Return Value COM-TX on selected Wavelength area, click Refresh and verify that the Actual Power (dBm) is Target Power of [Step 25a](#)  $\pm$  0.5 dB. If the channel does not come up, reduce VOA Attenuation by 5dB in [Step 25a](#) until the target power is reached.
- d) Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-TX port.
- e) Verify that the value of the COM-TX port matches the Actual Power value in [Step 25c](#) ( $\pm$  1 dB).
- f) Click the **Maintenance** > **OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**.

**Step 26** Repeat [Step 25](#) for all the others of Side n, where n is A, B, C, D, E, F, G, or H but n not equal to x.

**Step 27** In card view, display the 40-WXC-C card for Side x and click the Maintenance > OCHNC tabs. In the Return Value COM-TX on selected Wavelength area, click Refresh and then Delete.

**Step 28** In card view, display the transponder card and click the **Provisioning** > **Line** tabs. For trunk port, choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list. Click **Apply**.

**Step 29** To test all wavelengths, repeat [Step 6](#) through [Step 28](#) for each wavelength. In [Step 6](#), set the wavelength to the next odd wavelength.

**Step 30** Disconnect the optical power meter from the LINE-TX port of the booster amplifier of the Side x.

**Step 31** Disconnect the transponder output port (with the 15-dB attenuator) from the LINE-RX port of the booster amplifier of the Side x.

**Step 32** In card view, display the 40-DMX-C card for Side x and click the Provisioning > Optical Line > Parameters tabs. Complete the following:

- a) Choose IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) from the Admin State drop-down list.
- b) Change the VOA Attenuation Calib. from the existing value to 0 (zero).
- c) Click **Apply**.

**Step 33** In card view, display the 40-MUX-C card for Side x and click the Provisioning > Optical Line > Parameters tabs. Choose IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) from the Admin State drop-down list and click **Apply**.

**Step 34** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Parameters** tabs and restore the values recorded in [Step 12a](#) for the following parameters:

- Power on the COM-TX port of preamplifier on Side X
- Power on the COM-RX port of the 40-WXC-C on Side X
- Power on the COM-TX port of the 40-WXC-C on Side X
- Power on the LINE-TX port of the booster amplifier on Side X

**Step 35** Repeat Steps [4](#) through [34](#) for all the others sides that are being installed.

**Step 36** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Port Status** tabs. Click **Launch ANS**.

Stop. You have completed this procedure.

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## NTP-G189 Performing the Node Upgrade Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure checks the connections and the output power values for a node in an upgraded ring. The upgraded node connects an existing in-service ROADM node with two sides (each equipped with MMU cards) to a native mesh node with two sides.                                                                                                                                                                                                                                              |
| <b>Tools/Equipment</b>         | Fully C-band tunable transponder or tunable laser source with an LC patchcord<br>1 15-dB LC attenuator<br>1 optical power meter with LC input connector<br>2 LC-LC patchcords (or at least one for each native side)<br>1 LC-LC adapter                                                                                                                                                                                                                                                         |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• Complete the <a href="#">Turn Up a Node</a> chapter</li> <li>• All sides completely wired (including patch panels), except the connections with the MMU cards in the existing in-service ROADM node; for more information, see the <a href="#">Turn Up a Node</a> chapter.</li> <li>• <a href="#">NTP-G186 Performing the Four-Degree and Eight-Degree Mesh Patch Panel Acceptance Test</a></li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### Procedure

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**Step 1** From the View menu, choose **Go to Network View**.

**Step 2** Click the **Alarms** tab.

- a) Verify that the alarm filter is not on. Complete the [“DLP-G128 Disable Alarm Filtering”](#) task as necessary.
- b) Verify that no equipment alarms appear indicating equipment failure or other hardware problems. (Equipment alarms are indicated by an EQPT in the Alarms tab Cond column.) If equipment failure alarms appear, investigate and resolve them before continuing.

Refer the *Cisco NCS 2000 Series Troubleshooting Guide* for procedures.

- Step 3** Insert a full C-band tunable transponder into an available slot for the node that you want to test.
- Step 4** Plug a 15-dB LC attenuator to the TX port of the transponder.
- Step 5** Complete the [DLP-G432 Setting the Transponder Wavelength](#) to tune the transponder to a wavelength yyyy.yy that is not used in any of the sides already carrying traffic (or 1530.33 nm if it is a new installation).
- Step 6** Complete the [DLP-G433 Recording Transponder Optical Power](#).
- Step 7** Disconnect the optical power meter from the TX port of the transponder card.
- Step 8** Make the following connections:
- Connect the transponder card output port (with the 15-dB attenuator) to the COM-RX port of the 40-WXC-C card on Side A.
  - Connect the optical power meter to the COM-TX port of the 40-WXC-C card on Side A.
  - Connect, using the LC-LC adapter, the patchcord from the COM-TX port with the patchcord from the COM-RX port of the Side B 40-WXC-C card.
- Step 9** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs. Complete the following:
- Record the values of the following parameters:
    - Power on the COM-TX port of the preamplifier on Side A
    - Power on the COM-RX port of the 40-WXC-C card on Side A
    - Power on the COM-TX port of the 40-WXC-C card on Side A
    - Power Fail Low Th on the COM-RX port of the preamplifier on Side A
    - Power on the COM-TX port of the preamplifier on Side B
    - Power on the COM-RX port of the 40-WXC-C card on Side B
    - Power on the COM-TX port of the 40-WXC-C card on Side B
    - Power Fail Low Th on the COM-RX port of the preamplifier on Side B
  - Change the values of the parameters as follows:
    - Power on the COM-TX port of the preamplifier on Side A = 1 dBm
    - Power on the COM-RX port of the 40-WXC-C card on Side A = -15 dBm
    - Power on the COM-TX port of the 40-WXC-C card on Side A = -15 dBm
    - Power Fail Low Th on the COM-RX port of the preamplifier on Side A = -30 dBm
    - Power on the COM-TX port of the preamplifier on Side B = 1 dBm
    - Power on the COM-RX port of the 40-WXC-C card on Side B = -15 dBm
    - Power on the COM-TX port of the 40-WXC-C card on Side B = -15 dBm
    - Power Fail Low Th on the COM-RX port of the preamplifier on Side B = -30 dBm
  - Click **Apply**.

d) In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Port Status** tabs. Click **Launch ANS**.

- Step 10** Display card view for the OPT-AMP-17 card on Side A and click the **Provisioning** > **Card** tabs. From the Working Card Mode drop-down list, verify that OPT-PRE appears and if not, choose it. Click **Apply**. Repeat for Side B.
- Step 11** Display card view for the transponder card and click the **Provisioning** > **Line** tabs. Choose **IS (ANSI)** or **Unlocked(ETSI)** from the Admin State drop-down list and click **Apply**.
- Step 12** In card view, display the 40-WXC-C card of Side A and complete the following:
- Click the **Provisioning** > **Optical Line** > **Parameters** tabs. Record the Power value of the COM-RX port.
  - Verify that the COM-RX value matches the transponder card optical power meter value recorded in [Step 6](#) (+/- 1 dB).
  - Click the **Inventory** > **Info** tabs and record the CRX -> EXP insertion loss.
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the EXP-TX port.
  - Verify that the EXP-TX port power value = (COM-RX port power value in Step a) - (EXP-TX Power value in Step d) (+/- 1 dB).
- Step 13** In card view, display the OPT-AMP-17 card for Side A and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#).
- Step 14** In card view, display the 40-WXC-C card for Side B and complete the following:
- Complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#). Set the Input Port on the **Maintenance** > **OCHNC** > **Insert Value** tabs to 1.
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-TX port.
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the COM-RX Power value matches the COM-TX port Power value in b (+/- 1 dB).
  - Click the **Provisioning** > **Optical Line** > **Parameters** tabs and record the Power value of the EXP-TX port.
  - Click the **Inventory** > **Info** tabs and record the CRX -> EXP insertion loss value.

g) Verify that the EXP-TX port power value = (COM-RX port power value) - (CRX -> EXP insertion loss value) (+/- 1 dB)

- Step 15** In card view, display the OPT-AMP-17 card for Side B and complete the [DLP-G434 Recording the OPT-AMP-17-C Power Value](#) task.
- Step 16** In card view, display the 40-WXC-C for Side A and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 17** In card view, display the 40-WXC-C for Side C and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
- Step 18** In card view, display the 40-WXC-C for Side D and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
- Step 19** In card view, display the 40-WXC-C for Side A and click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides B, C, and D of the 40-WXC-C card.
- Step 20** Display card view for the transponder card and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list.
- Step 21** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side B of the 40-WXC-C card.
- Step 22** Connect, using the LC-LC adapter, the patchcord from the COM-TX port with the patchcord in the COM-RX port for Side A of the 40-WXC-C card.
- Step 23** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder to the wavelength set in [Step 5](#).
- Step 24** Connect the transponder card output port (with the 15-dB attenuator) to the COM-RX port of the 40-WXC-C card on Side B.
- Step 25** Display card view for the transponder card. Click the **Provisioning > Line** tabs, and choose **IS (ANSI)** or **Unlocked (ETSI)** from the Admin State drop-down list.
- Step 26** In card view, display the 40-WXC-C card for Side A and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 27** In card view, display the 40-WXC-C for Side B and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 1.
- Step 28** In card view, display the 40-WXC-C for Side C and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 29** In card view, display the 40-WXC-C for Side D and complete the [DLP-G435 Setting the 40-WXC-C OCHNC Parameters](#) task. Set the Input Port on the **Maintenance > OCHNC > Insert Value** tabs to 2.
- Step 30** In card view, display the 40-WXC-C for Side B and click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**. Repeat for Sides A, C, and D of the 40-WXC-C card.
- Step 31** Display the card view for the transponder card. Click the **Provisioning > Line** tabs, and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list.
- Step 32** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs. Restore the values recorded in [Step 9a](#) for the following parameters:
- Power on the COM-TX port of the preamplifier on Side A
  - Power on the COM-RX port of the 40-WXC-C card on Side A
  - Power on the COM-TX port of the 40-WXC-C card on Side A
  - Power Fail Low Th on the COM-RX port of the preamplifier on Side A

- Power on the COM-TX port of the preamplifier on Side B
- Power on the COM-RX port of the 40-WXC-C card on Side B
- Power on the COM-TX port of the 40-WXC-C card on Side B
- Power Fail Low Th on the COM-RX port of the preamplifier on Side B

**Step 33** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Click **Launch ANS**.

**Step 34** Disconnect the patchcord in the COM-TX port from the patchcord in the COM-RX port of Side A of the 40-WXC-C card.

**Step 35** Make the following connections:

- a) Connect the transponder output port (with the 15-dB attenuator) to the LINE-RX port of the booster amplifier of Side C.
- b) Connect the optical power meter to the LINE-TX port of the booster amplifier of Side C.
- c) Connect the client TX of lambda yyyy.yy to the client RX of lambda yyyy.yy on the Side C patch panel.

**Step 36** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs and complete the following:

- a) Record the actual values of the following parameters:
  - Power on the COM-TX port of the preamplifier on Side X
  - Power on the COM-RX port of the 40-WXC-C card on Side X
  - Power on the COM-TX port of the 40-WXC-C card on Side X
  - Power on the LINE-TX port of the booster amplifier on Side X
- b) Set the values of the parameters as follows:
  - Power on the COM-TX port of the preamplifier on Side X = 8 dBm
  - Power on the COM-RX port of the 40-WXC-C card on Side X = 8 dBm
  - Power on the COM-TX port of the 40-WXC-C card on Side X = -18 dBm
  - Power on the LINE-TX port of the booster amplifier on Side X = -8 dBm
- c) Click **Apply**.

**Step 37** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs. Click **Launch ANS**.

**Step 38** In card view, display the 40-DMX-C card for Side C and complete the following:

- a) Click the **Provisioning > Optical Line > Parameters** tabs and record the VOA Attenuation Ref. value  $y$ .
- b) Set the VOA Attenuation Calib. to  $-y$ .
- c) Choose **OOS,MT (ANSI)** or **Locked,maintenance (ETSI)** from the Admin State drop-down list.

d) Click **Apply**.

- Step 39** In card view, display the 40-MUX-C card for Side C and click the **Provisioning > Optical Line > Parameterstabs**. Choose **OOS,MT** (ANSI) or **Locked,maintenance** (ETSI) from the Admin State drop-down list and click **Apply**.
- Step 40** In card view, display the booster amplifier card for Side C. Click the **Inventory > Info** tabs and record the LINE-RX -> COM TX insertion loss.
- Step 41** Display the transponder card in card view and click the **Provisioning > Line** tabs. Choose **IS** (ANSI) or **Unlocked** (ETSI) from the Admin State drop-down list and click **Apply**.
- Step 42** In card view, display the booster amplifier card for Side C and complete the following:
- Click the **Provisioning > Optical Line > Parameterstabs** and record the Power value of the COM-TX port.
  - Verify the COM-TX Power value = (Optical power meter value) – (LINE RX -> COM TX insertion loss value in [Step 40](#)) (+/- 1 dB).
- Step 43** In card view, display the preamplifier card for Side C and complete the following:
- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the COM-RX Power value matches the COM-TX port Power value in [Step 42a](#) (+/- 1 dB).
  - Click the **Provisioning > Opt. Ampli. Line > Parameters** tabs and record the Total Output Power value of the COM-TX port.
  - Verify that the COM-TX Total Output Power value is 8 dBm (+/- 1 dB).
- Step 44** In card view, display the 40-WXC-C card for Side C and complete the following:
- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the COM-RX power value matches the Total Output Power value of the COM-TX port value in [Step 43c](#) (+/- 1 dB).
  - Click the **Inventory > Info** tabs and record the CRX -> EXP insertion loss.
  - Record the CRX -> DROP insertion loss.
  - Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the EXP-TX port.
  - Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the DROP-TX port.
  - Verify that the EXP-TX Power value in Step [e](#) = (COM-RX value in Step [a](#)) - (CRX -> EXP value in Step [c](#)) (+/- 1 dB).
  - Verify that the DROP-TX value in Step [f](#) = (COM-RX value in Step [a](#)) - (CRX -> DROP value in Step [d](#)) (+/- 1 dB).
- Step 45** In card view, display the 40-DMX-C card for Side C and complete the following:
- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
  - Verify that the COM-RX port Power value in Step [a](#) matches the COM-TX port Power value in [Step 44b](#) (+/- 1 dB).
  - Click the **Inventory > Info** tabs and record the 1RX -> yTX insertion loss (where y is the channel number associated with yyyy.yy wavelength).
  - Click the **Provisioning > Optical Chn > Parameters** tabs and record the Power value of the CHAN-TX port associated with yyyy.yy wavelength.

- e) Verify that the CHAN-TX Power value = (COM-RX Power value in Step a) - (1RX -> yTX insertion loss value in Step c) (+/- 1 dB).

**Step 46** In card view, display the 40-MUX-C card for Side C and complete the following:

- Click the **Provisioning > Optical Chn > Parameters** tabs and record the Power value of the CHAN-RX port associated with yyyy.yy wavelength.
- Verify that the CHAN-RX value matches the CHAN-TX Power value in Step 45d (+/- 1.5 dB).
- Click the **Inventory > Info** tabs and record the yRX -> 1TX insertion loss (where y is the channel number associated with yyyy.yy wavelength).
- In the **Provisioning > Optical Line > Parameters** tabs, record the Power value of the COM-TX port.
- Verify that the COM-TX Power value = (CHAN-RX Power value in Step a) - (yRX -> 1TX insertion loss value in Step c) (+/- 1 dB).

**Step 47** In card view, display the 40-WXC-C card for Side C, and complete the following:

- Click the **Maintenance > OCHNC > Insert Value** tabs, and set the available parameters as follows:

- Target Power (dBm) = -18.0

**Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.

- Input port = 9 (ADD-RX)
- VOA Attenuation (dB) = 13
- Wavelength = yyyy.yy (value set in Step 5)

- Click **Apply**.
- Click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click Refresh and verify that the Actual Power (dBm) is -18 +/- 0.5 dB.
- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-TX port.
- Verify that the COM-TX Power value matches the Actual Power value in Step c (+/- 1 dB).

**Step 48** In card view, display the booster amplifier card for Side C, and complete the following:

- Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-RX port.
- Click the **Provisioning > Opt. Ampli. Line > Parameters** tabs and record the Power value of the LINE-TX port.
- Verify that the LINE-TX value matches the Side C Tx Amplifier Ch Power recorded in Step 36a (+/- 1 dB).
- Record the optical power meter value.
- Verify that the optical power meter value matches the LINE-TX Power value in Step b (+/- 1 dB).

**Step 49** In card view, display the 40-WXC-C card for Side C, and click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**.

**Step 50** Display Side A of the 40-WXC-C card in card view, and complete the following:

- Click the **Maintenance > OCHNC > Insert Value** tabs, and set the available parameters as follows:

- Target Power (dBm) = -18.0

**Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.

- Input port = 3 (EXP-RX)
- VOA Attenuation (dB) = 13
- Wavelength = yyyy.yy (value set in [Step 5](#))

- b) Click **Apply**.
- c) In the Return Value COM-TX on selected Wavelength area, click **Refresh** and verify that the Actual Power (dBm) is  $-18 \pm 0.5$  dB.
- d) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-TX port.
- e) Verify that the value of the COM-TX port matches the Actual Power value in Step c ( $\pm 1$  dB).
- f) Click the **Maintenance > OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**.

**Step 51** Repeat [Step 50](#) for the 40-WXC-C card of Side B.

**Step 52** Repeat [Step 50](#) for the 40-WXC-C card of Side D.

**Step 53** Display card view for the transponder card and choose **OOS,DSBLD (ANSI)** or **Locked,disabled (ETSI)** from the Admin State drop-down list.

**Step 54** Connect the transponder output port (with the 15-dB attenuator) to the Line RX port of the booster amplifier of Side D.

**Step 55** Complete the [DLP-G432 Setting the Transponder Wavelength](#) task to tune the transponder to the next odd wavelength after yyyy.yy nm.

**Step 56** Disconnect the patchcord between the client TX of lambda yyyy.yy from the client RX of lambda yyyy.yy on the Side C patch panel. Use this patchcord to connect the client TX of lambda yyyy.yy to the client RX of lambda yyyy.yy on the Side D patch panel. Note that yyyy.yy was recorded in [Step 5](#).

**Step 57** Repeat Steps [36](#) to [50](#) for Side D.

**Step 58** Display Side A of the 40-WXC-C card in card view, and complete the following:

- a) Click the **Maintenance > OCHNC > Insert Value** tabs, and set the available parameters as follows:

- Target Power (dBm) =  $-18.0$

**Note** The target power is not set if the power value is higher than the channel power that is allocated and equalized.

- Input port = 4 (EXP-RX)
- VOA Attenuation (dB) = 13
- Wavelength = yyyy.yy (value set in [Step 5](#))

- b) Click **Apply**.
- c) In the Return Value COM-TX on selected Wavelength area, click **Refresh** and verify that the Actual Power (dBm) is  $-18 \pm 0.5$  dB.
- d) Click the **Provisioning > Optical Line > Parameters** tabs and record the Power value of the COM-TX port.
- e) Verify that the value of the COM-TX port matches the Actual Power value in Step c ( $\pm 1$  dB).

- f) Click the **Maintenance** > **OCHNC** tabs. In the Return Value COM-TX on selected Wavelength area, click **Refresh** and then **Delete**.

**Step 59** Repeat [Step 58](#) for the 40-WXC-C card of Side B.

**Step 60** Repeat [Step 58](#) for the 40-WXC-C card of Side C.

**Step 61** Disconnect the optical power meter from the LINE-TX port of the booster amplifier of Side D.

**Step 62** Disconnect the transponder output port (with the 15-dB attenuator) from the LINE-RX port of the booster amplifier of the Side x.

**Step 63** In card view, display the 40-DMX-C card for Side C, and complete the following:

- Click the **Provisioning** > **Optical Line** > **Parameters** tabs.
- Choose **IS,AINS** (ANSI) or **Unlocked,automaticInService** (ETSI) from the Admin State drop-down list.
- Set the VOA Attenuation Calib to 0 (zero).
- Click **Apply**.

**Step 64** In card view, display the 40-MUX-C card for Side C and click the **Provisioning** > **Optical Line** > **Parameters** tabs. Choose **IS,AINS** (ANSI) or **Unlocked,automaticInService** (ETSI) from the Admin State drop-down list and click **Apply**.

**Step 65** Repeat Steps [63](#) and [64](#) for Side D.

**Step 66** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs and restore the values recorded in [Step 36a](#) for the following parameters for Sides C and D:

- Power on the COM-TX port of the preamplifier on Side X
- Power on the COM-RX port of the 40-WXC-C card on Side X
- Power on the COM-TX port of the 40-WXC-C card on Side X

**Step 67** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Port Status** tabs. Click **Launch ANS**.

**Step 68** Restore the connections to the MMU cards of the four sides using the patchcords tested in this procedure:

- Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side A to the EXP-A-RX port of the MMU in the lowest slot of the upgraded ROADM node.
- Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side A to the EXP-A-TX port of the MMU in the lowest slot of the upgraded ROADM node.
- Connect the patchcord from the COM-TX port of the 40-WXC-C card on Side B to the EXP-A-RX port of the MMU in the highest slot of the upgraded ROADM node.
- Connect the patchcord from the COM-RX port of the 40-WXC-C card on Side B to the EXP-A-TX port of the MMU in the highest slot of the upgraded ROADM node.

**Stop. You have completed this procedure.**

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# NTP-G243 Performing the Two-Degree ROADM Node with 40-SMR-1-C and OPT-AMP-17-C Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests a two-degree ROADM node with 40-SMR-1-C and OPT-AMP-17-C cards installed.                                                                                                                                                                                                                                                                                                                       |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_DME_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                            |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• <a href="#">NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File</a></li> <li>• <a href="#">NTP-G30 Installing the DWDM Cards</a></li> <li>• <a href="#">NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs</a></li> <li>• <a href="#">NTP-G37 Running Automatic Node Setup</a></li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                       |

## Procedure

- Step 1** On the 40-SMR-1-C card on Side A, do the following steps:
- Remove the LC connectors between the ADD/DROP ports of the 40-SMR-1-C card and the MUX and DMX units.
  - Create a physical loopback by connecting a fiber optic jumper between the ADD and DROP ports.
- Step 2** Retrieve the power set point of the DROP-TX port of the 40-SMR-1-C card on Side A. To view this set point, do the following:
- Go to node view (single-shelf mode) or multishelf view (multishelf mode) and click the **Provisioning > WDM-ANS > Provisioning** tabs.
  - In the Selector window on the left, expand the 40-SMR-1-C card on Side A.
  - Expand the Port DROP-TX category.
  - Select Power.

- e) Record the value of the Shelf *i* Slot *i* (40-SMR-1-C).Port DROP-TX.Power parameter in the right pane.
- f) If the value of the Power set point is greater than -6dBm, continue with [Step 3](#), else edit the Power set point to -6dBm and complete the [NTP-G37 Running Automatic Node Setup](#) task.  
This will ensure there is enough power to perform the optical validation procedure.

**Step 3** Display the OPT-AMP-17-C on Side A in card view, and complete the following steps:

- a) Click the **Maintenance > ALS** tabs.
- b) From the ALS Mode pull-down menu, select **Disable**.

**Step 4** Connect a tunable laser or a fully tunable TXP\_DME\_10E\_C card to the LINE RX port of the OPT-AMP-17-C card on Side A. Connect a 10dB bulk attenuator to the fiber or regulate the output power of the tunable laser to -10dBm.

**Step 5** Create an OCHNC DCN for channel 1 on Side A related to the ADD-DROP path using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task. The circuit must be bidirectional connecting the ADD-RX port of the 40-SMR-1-C card to the LINE-TX port of the OPT-AMP-17-C card and vice-versa (LINE-RX port of the OPT-AMP-17-C card to the DROP-TX port of the 40-SMR-1-C card)

**Step 6** Set the tunable laser or the TXP\_DME\_10E\_C card to the first wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state.

**Step 7** Verify the power levels of channel 1 by performing the following steps:

- a) Check the optical connection between the OPT-AMP-17-C and 40-SMR-1-C cards. The power difference between the COM-TX port of OPT-AMP-17-C and the LINE-RX port of 40-SMR-1-C must not exceed of +/- 1.5dB.
- b) Check the following parameters of the RX-amplifier in the 40-SMR-1-C card:
  - The Working mode on the EXP-TX port must be the same as the ANS set point value that is set to Gain.
  - The total power on the EXP-TX port must be equal to Channel Power Ref. with a tolerance +/-1.5dB.
  - The DCU insertion loss must be equal to the power difference between the DC-TX and DC-RX ports and the absolute value of the DCU insertion loss must be less than 11dB.
- c) Check the parameters of the drop VOA in the 40-SMR-1-C card. The value of the VOA Attenuation parameter on the DROP-TX port must be equal to the value of the VOA Attenuation Ref. parameter with a tolerance of +/-1.0dB.
- d) Check the following parameters of the add VOA in the 40-SMR-1-C card:
  - In the card view, click the **Provisioning > OCH > Parameters** tabs.
  - Select the first channel from the Wavelength drop-down list and click **Retrieve**. The optical path from the ADD-RX port to the LINE-TX port is highlighted.
  - Verify if the value of the Power To parameter is the same as that of the VOA Power Ref. parameter with a tolerance +/-1.0dB.
- e) Check the optical connection between the 40-SMR-1-C and OPT-AMP-17-C card. The power difference between the LINE-TX port of the 40-SMR-1-C card and the COM-RX port of the OPT-AMP-17-C card must not exceed +/- 1.5dB.
- f) Check the following parameters of the OPT-AMP-17-C card:
  - The Working mode on the LINE-TX port must be the same as the ANS set point value that is set to Gain.

- The value of the Gain parameter must be equal to the Gain set point +/-1.0dB. The gain set point for the OPT-AMP-17-C card is 17dB.

- Step 8** Delete the OCHNC DCN circuit for channel 1 on Side A that is related to the ADD-DROP path created in [Step 5](#) using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 9** Create an OCHNC DCN circuit for channel 1 on Side A related to the EXP path using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task. The circuit must be bidirectional and connects the LINE-RX port of the OPT-AMP-17-C card on Side A to the LINE-TX port of the OPT-AMP-17-C card on Side B.
- Step 10** Verify the power levels of channel 1 by performing the following steps:
- a) Check the optical connection between the OPT-AMP-17-C and 40-SMR-1-C card on Side A. The power difference between the COM-TX port of OPT-AMP-17-C and the LINE-RX port of 40-SMR-1-C must not exceed +/- 1.5dB.
  - b) Check the following parameters of the RX-amplifier in the 40-SMR-1-C card:
    - The Working mode on the EXP-TX port must be the same as the ANS set point value that is set to Gain.
    - The total power on the EXP-TX port must be equal to Channel Power Ref. with a tolerance +/-1.5dB.
    - The DCU insertion loss must be equal to the power difference between the DC-TX and DC-RX ports and the absolute value of the DCU insertion loss must be less than 11dB.
  - c) Check the optical connection between 40-SMR-1-C on Side A and 40-SMR-1-C on Side B. The power difference between the EXP-TX port and the EXP-RX port must not exceed +/- 1.5dB.
  - d) Check the parameters of the pass-through VOA in the 40-SMR-1-C card on Side B:
    - In the card view, click the **Provisioning > OCH > Parameters** tabs.
    - Select the first channel from the Wavelength drop-down list and click **Retrieve**. The optical path from the EXP-RX port to the LINE-TX port is highlighted.
    - Verify if the value of the Power To parameter is the same as the value of the VOA Power Ref. parameter with a tolerance +/-1.0dB.
  - e) Check the optical connection between the 40-SMR-1-C and OPT-AMP-17-C card on Side B. The power difference between the LINE-TX port of the 40-SMR-1-C card and the COM-RX port of the OPT-AMP-17-C card must not exceed +/- 1.5dB.
  - f) Check the following parameters of the OPT-AMP-17-C card on Side B:
    - The Working mode on the LINE-TX port must be the same as the ANS set point value that is set to Gain.
    - The value of the Gain parameter must be equal to the Gain set point +/-1.0dB. The gain set point for the OPT-AMP-17-C card is 17dB.

- Step 11** Turn off the laser or place the trunk port of the TXP card in OutofService (OOS) state and delete the OCHNC DCN circuit on Side A related to channel 1 created in [Step 9](#) using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 12** Set the tunable laser or the TXP\_DME\_10E\_C card to the second wavelength of the 100-GHz ITU-T C-band grid and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state. Repeat [Step 5](#) through [Step 11](#) for the second wavelength.
- Step 13** Repeat [Step 12](#) for the remaining 38 wavelengths on Side A.
- Step 14** Delete the OCHNC DCN circuit related to channel 40 using the [DLP-G106 Deleting Optical Channel Network Connections](#) task, and turn off the laser or place the trunk port of the TXP\_DME\_10E\_C card in OutofService (OOS) state.
- Step 15** On the 40-SMR-1-C card on Side A, do the following steps:
- Remove the physical loopback between the ADD and DROP ports on the 40-SMR-1-C card created in [Step 1](#).
  - Reconnect the DROP-TX port to the RX port on the DMX side of the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panel.
- Step 16** On the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit on Side A, do the following steps:
- Create a physical loopback between the MUX and DMX ports on the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit.
  - Connect the TX port on the MUX side of the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit to a power meter. If the power meter is not available, reconnect the TX port of the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit to the ADD-RX port of the 40-SMR-1-C card on Side A.
- Step 17** Create an OCHNC DCN for channel 1 on Side A related to the ADD-DROP path as done in [Step 5](#).
- Step 18** Set the tunable laser or the TXP\_DME\_10E\_C card to the first wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state.
- Step 19** To verify the insertion loss on the optical path of the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit, do the following steps:
- Retrieve the power value on the DROP-TX port of the 40-SMR-1-C card and record it as Pin.
  - Measure the optical power on the power meter or the ADD-RX port and record it as Pout.
  - Verify that the power difference between the power values obtained in step 21 a. and step 21 b. does not exceed the insertion loss value specified for the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit. (Pin - Pout must be less than 13dB with a tolerance of 1dB).
- Step 20** Turn off the laser or place the trunk port of the TXP card in OutofService (OOS) state and delete the OCHNC DCN circuit on Side A related to channel 1 using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 21** Set the tunable laser or the TXP\_DME\_10E\_C card to the next wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state and repeat [Step 17](#) through [Step 20](#) for the new wavelength.
- Step 22** Restore the initial configuration after checking all the 40 available wavelengths:
- Remove the power meter and reconnect the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit to the ADD-RX port of the 40-SMR-1-C card.
  - Remove the physical loopbacks between the MUX and DMX ports on the 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit on Side A.
  - Reset the ALS parameter on the 40-SMR-1-C card. Complete the following:

- In card view, display the 40-SMR-1-C card on Side A and click the **Maintenance > ALS** tabs.
  - From the ALS Mode pull-down menu, select **Auto Restart**.
- d) Import the CTP XML file again using the [NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File](#) task to overwrite any manual settings.
- e) Complete the task and verify that there are no errors.
- Step 23** Repeat all the steps from [Step 1](#) through [Step 22](#) related to Side B.  
**Stop. You have completed this procedure.**

## NTP-G244 Performing the Four Degree ROADM Node with 40-SMR-2-C Cards Acceptance Test

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                 | This procedure tests a four-degree ROADM node with 40-SMR-2-C cards installed.                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Tools/Equipment</b>         | One of the following: <ul style="list-style-type: none"> <li>• A tunable laser</li> <li>• TXP_DME_10E_C</li> </ul> An optical power meter or optical spectrum analyzer<br>Two bulk attenuators (10 dB) with LC connectors                                                                                                                                                                                                                                          |
| <b>Prerequisite Procedures</b> | <ul style="list-style-type: none"> <li>• Complete the <a href="#">NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File</a> task.</li> <li>• Complete the <a href="#">NTP-G30 Installing the DWDM Cards</a>.</li> <li>• Complete the <a href="#">NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs</a></li> <li>• <a href="#">NTP-G37 Running Automatic Node Setup</a></li> <li>• <a href="#">DLP-G46 Log into CTC</a></li> </ul> |
| <b>Required/As Needed</b>      | As needed                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Onsite/Remote</b>           | Onsite                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Security Level</b>          | Superuser only                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Procedure

- 
- Step 1** On the 40-SMR-2-C card on Side A, do the following steps:
- Remove the LC connectors between the ADD/DROP ports of the 40-SMR-2-C card and the MUX and DMX units.
  - Create a physical loopback by connecting a fiber optic jumper between the ADD and DROP ports.
- Step 2** Retrieve the power set point of the DROP-TX port of the 40-SMR-2-C card on Side A. To view this set point, do the following:
- Go to the multishelf view (multishelf mode) and click the **Provisioning > WDM-ANS > Provisioning** tabs.
  - In the Selector window on the left, expand the shelf.
  - Expand the 40-SMR-2-C card on Side A.
  - Expand the Port DROP-TX category.
  - Select Power.
  - Record the value of the Shelf *i* Slot *i* (40-SMR-2-C).Port DROP-TX.Power parameter in the right pane.
  - If the value of the Power set point is greater than -6dBm, continue with [Step 3](#), else edit the Power set point to -6dBm and complete the [NTP-G37 Running Automatic Node Setup](#) task.  
This will ensure there is enough power to perform the optical validation procedure.
- Step 3** Display the 40-SMR-2-C card for Side A in card view and complete the following steps:
- Click the **Maintenance > ALS** tabs.
  - From the ALS Mode pull-down menu, select **Disable** for port 8 (LINE-TX).
  - Click **Apply**.
- Step 4** Connect a tunable laser or a fully tunable TXP\_DME\_10E\_C to the LINE RX port of the 40-SMR-2-C card on Side A. Connect a bulk attenuator to the fiber or regulate the output power of the tunable laser to -10dBm.
- Step 5** Create an OCHNC DCN on Side A related to the ADD-DROP path of channel 1 using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task. The circuit must be bidirectional connecting the ADD-RX port to the LINE-TX port of the 40-SMR-2-C card and vice-versa (LINE-RX port to the DROP-TX port of the 40-SMR-2-C card)
- Step 6** Set the tunable laser or the TXP\_DME\_10E\_C card to the first wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state.
- Step 7** Verify the power levels of channel 1 by performing the following steps:
- Check the parameters of the RX-amplifier in the 40-SMR2-C card:
    - In the 40-SMR2-C card view, click the **Provisioning > Opt.Ampli.Line > Parameters** tabs.
    - Verify that the working mode on the EXP-TX port is set to Gain.
    - Record the values of the Total Output Power and Channel Power Ref. parameters.
    - Verify that the value of the Total Output Power is within +/-1.0 dB of the Channel Power Ref. value.
    - Record the value of the DCU insertion loss parameter and verify that the value is less than 11 dB.
  - Check the parameters of the drop VOA in the 40-SMR-2-C card:
    - Go to the multishelf view (multishelf mode) and click the **Provisioning > WDM-ANS > Port Status** tabs.

- In the Selector window on the left, expand shelf *i*, where *i* is the shelf you are working on.
- Expand Slot *i* (40-SMR2-C), where *i* is the slot where the 40-SMR2-C card is located.
- Expand the Port DROP-TX category.
- Click the VOA Target Attenuation parameter.
- Record the VOA target attenuation displayed in the Value field.
- In the 40-SMR2-C card view, click the **Provisioning** > **Optical Line** > **Port Status** tabs.
- Record the VOA Attenuation Ref. value on Port 6 (DROP-TX).
- Verify that the value of the VOA Target Attenuation parameter recorded above is equal to the value of the VOA Attenuation Ref. parameter on the DROP-TX port with a tolerance +/-1.0 dB.

c) Check the parameters of the add VOA in the 40-SMR-2-C card:

- In the 40-SMR-2-C card view, click the **Provisioning** > **OCH** > **Parameters** tabs.
- Select the required channel from the Wavelength drop-down list and click **Retrieve**. The optical path from the ADD-RX port to the LINE-TX port is displayed in the table.
- Record the values of the Power To and VOA Power Ref. parameters for the ADD-RX to LINE-TX row.
- Verify that the value of the VOA Power Ref. parameter is equal to the value of the Power To parameter with a tolerance +/-1.0dB.
- In the 40-SMR-2-C card view, click the **Provisioning** > **Opt.Ampli.Line** > **Parameters** tabs.
- Record the working mode of Port 8 (LINE-TX).
- Verify that the working mode on the LINE-TX port is set to Gain.
- Go to the multishelf view (multishelf mode) and click the **Provisioning** > **WDM-ANS** > **Port Status** tabs.
- In the Selector window on the left, expand shelf *i*, where *i* is the shelf you are working on.
- Expand Slot *i* (40-SMR2-C), where *i* is the slot where the 40-SMR2-C card is located.
- Expand the Port LINE-TX category.
- Click the Gain parameter.
- Record the gain displayed in the Value field.
- Verify that the gain is equal to 17 dB.

**Step 8** Delete the OCHNC DCN circuit for channel 1 on Side A related to the ADD-DROP path that was created in [Step 5](#) using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.

**Step 9** Create an OCHNC DCN circuit for channel 1 on Side A related to the EXP-TX path towards Side B using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task. The circuit must be bidirectional and connects the LINE-RX port of the 40-SMR-2-C card on Side A to the LINE-TX port of the 40-SMR-2-C card on Side B.

**Step 10** Verify the power levels of channel 1 by performing the following steps:

- a) Check the parameters of the RX-amplifier in the 40-SMR-2-C card:

- In the 40-SMR2-C card view on Side A, click the **Provisioning > Opt.Ampli.Line > Parameters** tabs.
  - Verify that the working mode on the EXP-TX port is set to Gain.
  - Record the values of the Total Output Power and Channel Power Ref. parameters.
  - Verify that the value of the Total Output Power is within +/-1.0 dB of the Channel Power Ref. value.
- b) Check the optical connection between Side A and Side B through the 15454-PP-4-SMR patch panel. Depending on the source side, the EXP-*i*-RX port of the destination side varies. Verify the connectivity among the different sides using the 15454-PP-4-SMR patch panel block diagram in the [Node Reference](#) chapter. For example, on Side A, EXP-TX is connected to Side B on EXP-1-RX, Side C on EXP-2-RX, and Side D on EXP-3-RX. The power difference between the EXP-TX port and the EXP-*i*-RX port must be less than 7 dB.
- In the 40-SMR2-C card view on Side B, click the **Provisioning > Optical Line > Parameters** tabs.
  - Record the express RX power on Port 10 (EXP-RX 1-2).
  - Compare the express RX power to the total output power recorded in Step 11a.
  - Verify that the absolute value of the total output power minus the express RX power is less than 7 dB.
- c) Check the parameters of the pass-through VOA and TX-amplifier in the 40-SMR-2-C card on Side B:
- In the card view, click the **Provisioning > OCH > Parameters** tabs.
  - Select the first channel from the Wavelength drop-down list and click **Retrieve**.
  - View the optical path from the EXP-*i*-RX port to the LINE-TX port that is displayed in the table.
  - Verify that the value of the Power To parameter is the same as the value of the Channel Power Ref. parameter with a tolerance +/-1.0dB.
  - Click the **Provisioning > Opt.Ampli.Line > Parameters** tabs.
  - Verify that the working mode on Port 8 (LINE-TX) is set to Gain.
  - Ensure that the value of the gain parameter on Port 8 (LINE-TX) must be equal to 17 dB.
  - The Working mode on the LINE-TX port must be the same as the ANS set point value that is set to Gain.
  - The value of the Gain parameter on the LINE-TX port must be equal to the Gain set point +/-1.0dB. The gain set point for the 40-SMR-2-C card is 17dB.

- Step 11** Delete the OCHNC DCN circuit towards Side B related to channel 1 created in [Step 9](#) using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 12** Create the OCHNC DCN circuit for channel 1 on Side A related to EXP-TX path towards Side C using the [DLP-G105 Provisioning Optical Channel Network Connections](#) task. Repeat [Step 10](#) and [Step 11](#) for the circuit that is created.
- Step 13** Repeat [Step 12](#) towards Side D, turn off the laser or place the trunk port of the TXP\_DME\_10E\_C card in OutofService (OOS) state.
- Step 14** Set the tunable laser or the TXP\_DME\_10E\_C card to the second wavelength of the 100-GHz ITU-T C-band grid and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state. Repeat [Step 5](#) through [Step 13](#) for the second wavelength.
- Step 15** Repeat [Step 14](#) for the remaining 38 wavelengths on Side A.
- Step 16** Delete the OCHNC DCN circuit related to channel 40 using the [DLP-G106 Deleting Optical Channel Network Connections](#) task, and turn off the laser or place the trunk port of the TXP\_DME\_10E\_C card in OutofService (OOS) state.
- Step 17** On the 40-SMR-2-C card on Side A, do the following steps:
- Remove the physical loopback between the ADD and DROP ports on the 40-SMR-2-C card created in [Step 1](#).
  - Reconnect the DROP-TX port on the 40-SMR2-C card to the COM-RX port on the DMX side of the 15216-MD-40-ODD patch panel.
  - Reconnect the ADD-RX port on the 40-SMR2-C card to the COM-TX port on the MUX side of the 15216-MD-40-ODD patch panel.
- Step 18** On the 15216-MD-40-ODD unit on Side A, do the following steps:
- Create a physical loopback between the MUX and DMX ports of the 15216-MD-40-ODD unit that are related to the same wavelength. Perform this step for all the 40 wavelengths on the 15216-MD-40-ODD patch panel on the side you are working on.
- Step 19** Create an OCHNC DCN for channel 1 on Side A related to the ADD-DROP path as done in [Step 5](#).
- Step 20** Set the tunable laser or the TXP\_DME\_10E\_C card to the first wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state.
- Step 21** To verify the insertion loss on the optical path of the 15216-MD-40-ODD unit on Side A, do the following steps:
- In the 40-SMR2-C card view, click the **Provisioning > Optical Line > Parameters** tabs.
  - Retrieve the power value on Port 6 (DROP-TX) of the 40-SMR-2-C card and record it as Pin.
  - Retrieve the power value on Port 5 (ADD-RX) port and record it as Pout.
  - Verify that the power difference between the power values obtained in step 22 b. and step 22 c. do not exceed the insertion loss value specified for the 15216-MD-40-ODD unit. (Pin - Pout must be less than 13dB with a tolerance of 1dB).
- Step 22** Turn off the laser or place the trunk port of the TXP\_DME\_10E\_C card in OutofService (OOS) state and delete the OCHNC DCN circuit on Side A related to channel 1 using the [DLP-G106 Deleting Optical Channel Network Connections](#) task.
- Step 23** Set the tunable laser or the TXP\_DME\_10E\_C card to the next wavelength of the 100-GHz ITU-T C-band grid (1530.33 nm) and place the trunk port of the TXP\_DME\_10E\_C card in the In-Service (IS) state and repeat [Step 19](#) through [Step 22](#) for the new wavelength.
- Step 24** Restore the initial configuration after checking all the 40 available wavelengths:
- Remove the power meter and reconnect the 15216-MD-40-ODD unit to the ADD-RX port of the 40-SMR-2-C card.

- b) Remove the physical loopbacks between the MUX and DMX ports on the 15216-MD-40-ODD unit on Side A.
- c) Reset the ALS parameter on the 40-SMR-2-C card. Complete the following:
  - In card view, display the 40-SMR-2-C and click the **Maintenance > ALS** tabs.
  - From the ALS Mode pull-down menu, select **Auto Restart**.
- d) Import the CTP XML file again using the [NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File](#) task to overwrite any manual settings.
- e) Complete the [NTP-G37 Running Automatic Node Setup](#) task and verify no errors are present.

**Step 25** Repeat all the steps from [Step 1](#) through [Step 24](#) related to Side B.

**Step 26** Repeat all the steps from [Step 1](#) through [Step 24](#) related to Side C.

**Step 27** Repeat all the steps from [Step 1](#) through [Step 24](#) related to Side D.

**Stop. You have completed this procedure.**

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