INSTALL THE RF MODULE(S)

The following sections guide you through the installation of an RF Module into a Remote Unit chassis. The process to install the four different types of RF Modules is basically the same; however, differences are noted and should be followed. Observe all cautions and warnings listed in "Safety Precautions for RF Modules" on page 30.

In the following steps, the RF cables and connectors are referred to as MOD N TX0/RX0 and as MOD N TX1/RX1 where N equals A, B, C, or D.

When installing RF Modules, populate the RF Modules from highest frequency band to lowest within the Remote Unit chassis. Likewise, for power output, populate from the bottom bay to the top; higher output to lower output. That is, for a deployment with 2100 40W, 1900 40W, 850 20W and 700 20W MIMO, install the RF Modules as follows:

- **2100 40W RF Module in Bay A**
- **1900 40W RF Module in Bay B**
- **850 20W RF Module in Bay C**
- **700 20W MIMO RF Module in Bay D.**

UNPACK AND INSPECT THE RF MODULE

1 Inspect the exterior of the shipping container(s) for evidence of rough handling that may have damaged the components in the container.

2 Unpack each container while carefully checking the contents for damage and verify with the packing slip.

3 If damage is found or parts are missing, file a claim with the commercial carrier and notify CommScope Customer Service (see "DCCS Global Technical Support" on page 123). Save the damaged cartons for inspection by the carrier.

4 Save all shipping containers for use if the equipment requires shipment at a future date.

Handle the RF Module with care during installation. Be especially careful to not damage the thermal-interface material (TIM), which is attached to the LPA, DARTs, and/or Motherboard with TX/RX boards. If the TIM is damaged, the LPA can overheat. Before installing the RF Module, check to see if the heatsink material is gouged or cracked. If the TIM is damaged, do not install the RF Module and contact CommScope for assistance (see "DCCS Global Technical Support" on page 123 for contact information).

If the thermal-interface material is damaged, the installation and use of the RF Module may void the warranty of the RF Module.

REMOVE RELEASE LINERS FROM THE RF MODULE

📝 **Release Liners are present on front and back of new modules.**

1 Open the Remote Unit enclosure.

2 Remove release liners, if present, from the thermal pads on the RF Module prior to installing the module into the Remote Unit chassis.

⚠️ **The thermal pads are very sensitive to mishandling—do not nick, scratch, or ding them.**

For Single- and Dual-Bay RF Modules, the thermal pads are located as listed below and as shown in Figure 19, which shows a Legacy Dual-Bay 40W RF Module.

- one large pad on the back surface of each Linear Power Amplifier (LPA)

- up to two on the front surface (DARTs)

- one on the left side for the (RDI)

- one on the vector modulator board
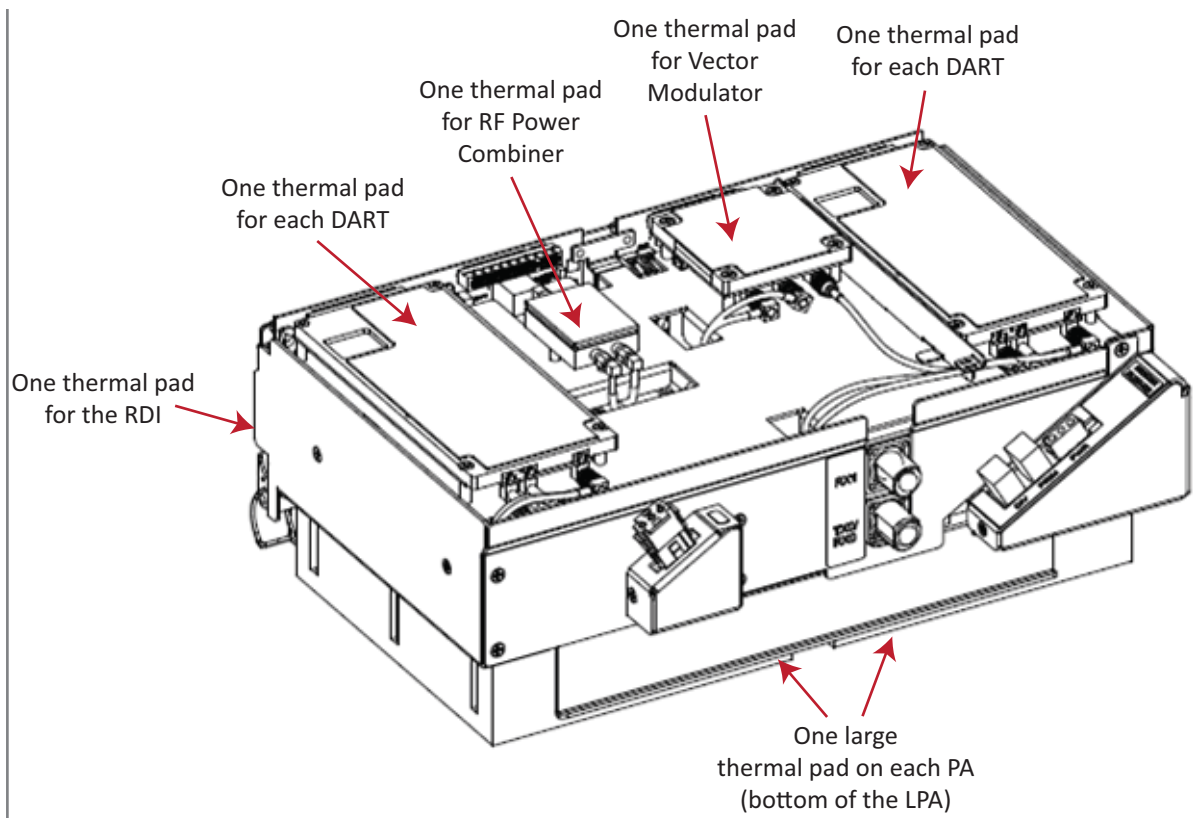
- one on the RF power combiner.

Figure 19. Thermal Pads on a Legacy Dual-Bay 40W RF Module

For HDM RF Modules, the thermal pads are located as listed below and as shown in Figure 20.

- one pad for each Rx and Tx board
- one large pad over the DPM
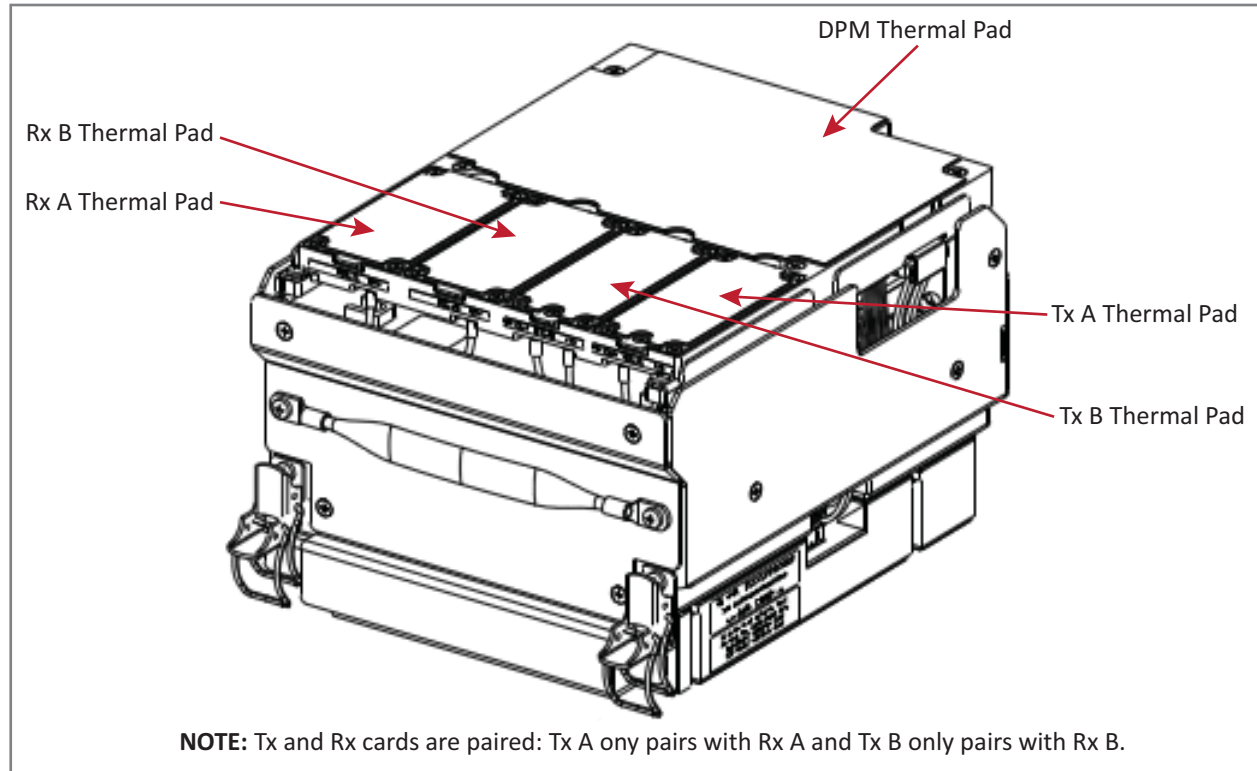- one for each Power Amplifier (PA), which is on the bottom of the HDM RF Module.

DPM Thermal Pad

Rx B Thermal Pad

Rx A Thermal Pad

Tx A Thermal Pad

Tx B Thermal Pad

NOTE: Tx and Rx cards are paired: Tx A ony pairs with Rx A and Tx B only pairs with Rx B.

Figure 20. Thermal Pads on an HDM RF Module

CHECK THE DC POWER SWITCH FOR THE MODULE BAY

⚠️ **The DC Power switch to the RF Module must be in its Off position before connecting or disconnecting its coaxial cables; otherwise equipment damage may occur.**

DC Power switch for Bay D

DC Power switch for Bay C

DC Power switch for Bay B

DC Power switch for Bay A
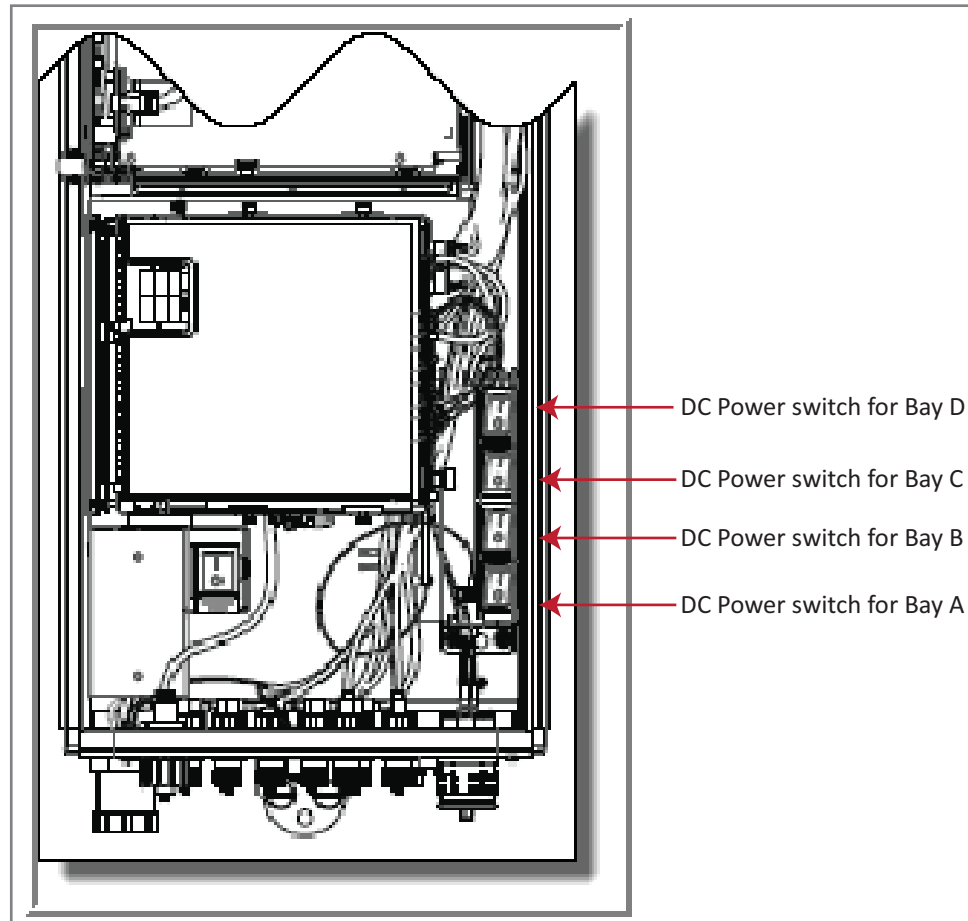
DUAL-BAY MODULES ONLY—REMOVE THE MODULE BAY SHELF
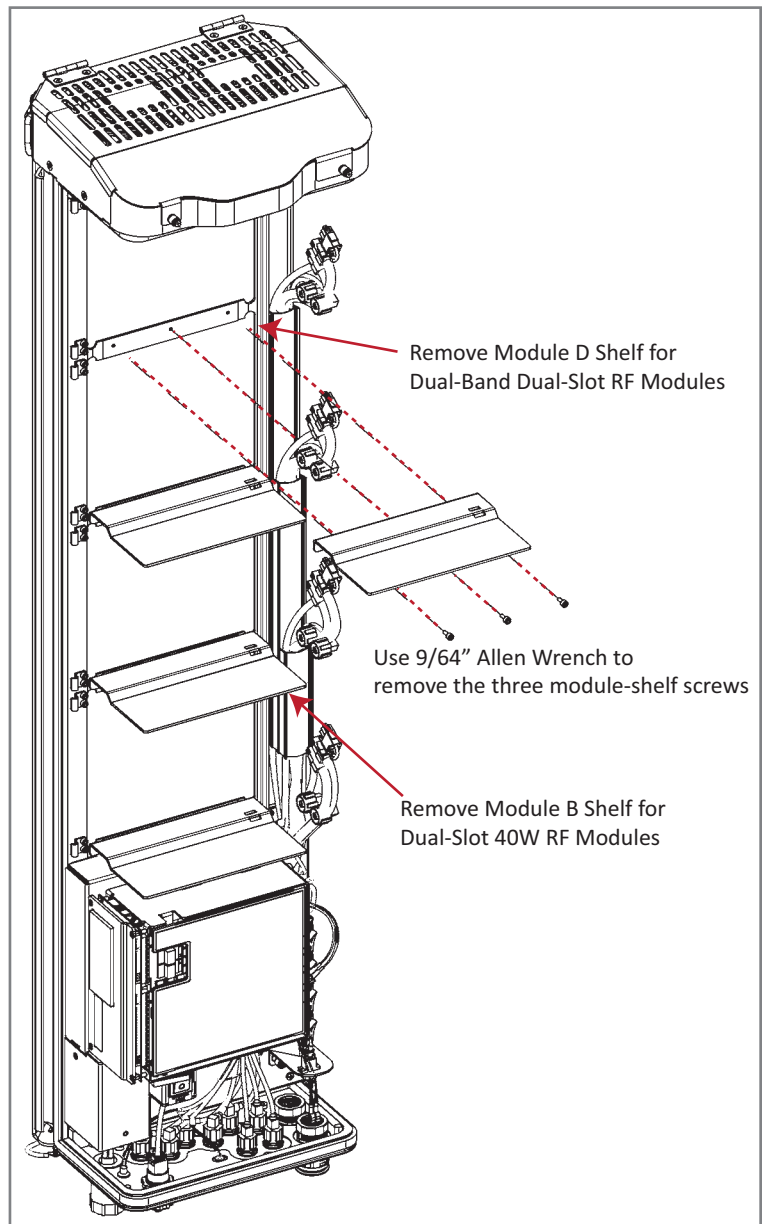
FOR DUAL-BAY RF MODULES ONLY.

If you are installing a Dual-Bay RF Module, you must remove a module bay shelf from the PRU chassis to accommodate the module's size. (For further information, see Table 16 on page 27.)

Remove the shelf as appropriate for the RF Module:

- When installing in the A and B Bays, remove the Module B Bay Shelf.

- When installing in the C and D Bays, remove Module D Bay Shelf.

To remove a Module Bay Shelf:

1 Use a 9/64" Allen™ wrench to remove the three screws that attach the module shelf to the PRU chassis, as shown in the graphic to the right.

2 Discard or store the module shelf and fasteners.

Remove Module D Shelf for Dual-Band Dual-Slot RF Modules

Use 9/64" Allen Wrench to remove the three module-shelf screws

Remove Module B Shelf for Dual-Slot 40W RF Modules

INSTALL THE RF MODULE INTO THE PRISM REMOTE CHASSIS

1   Hold the RF Module so that the DART card(s) face away from the PRU and the Mounting Hook is toward the Receiving flange on the PRU chassis.

> **Always install RF Modules from the bottom up. Do not skip a bay, as this provides more efficient heat dissipation.**

2   Holding the RF Module at a 45° angle in respect to the rear heatsink, rest the bottom surface of the module on the RF Module shelf, as shown in one of the following graphics, and as applicable to the RF Module.

- Single-Bay RF Module: Figure 21 on page 91

- HDM RF Module: Figure 22 on page 92

- Dual-Bay RF Module: Figure 23 on page 93

- Legacy Dual-Bay 40W RF Module: Figure 24 on page 94.

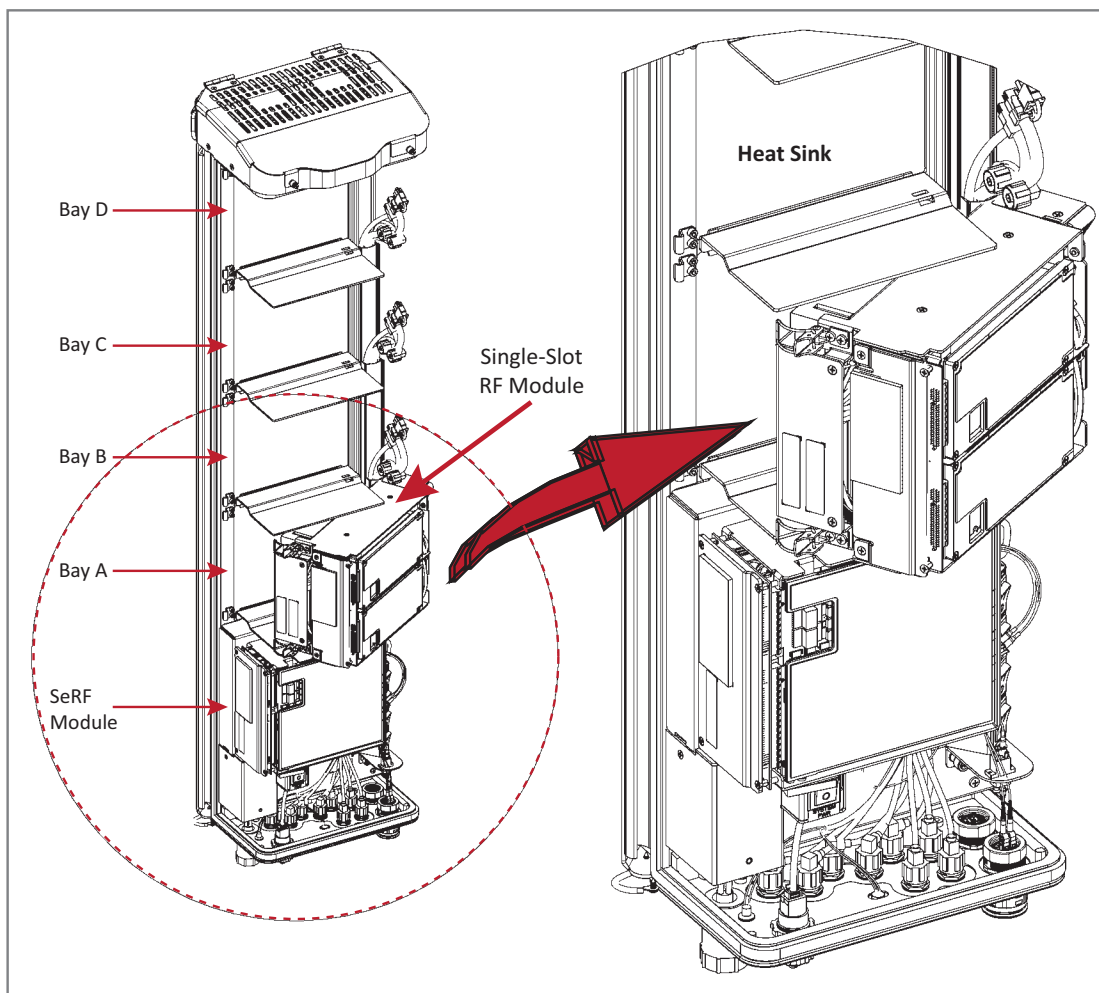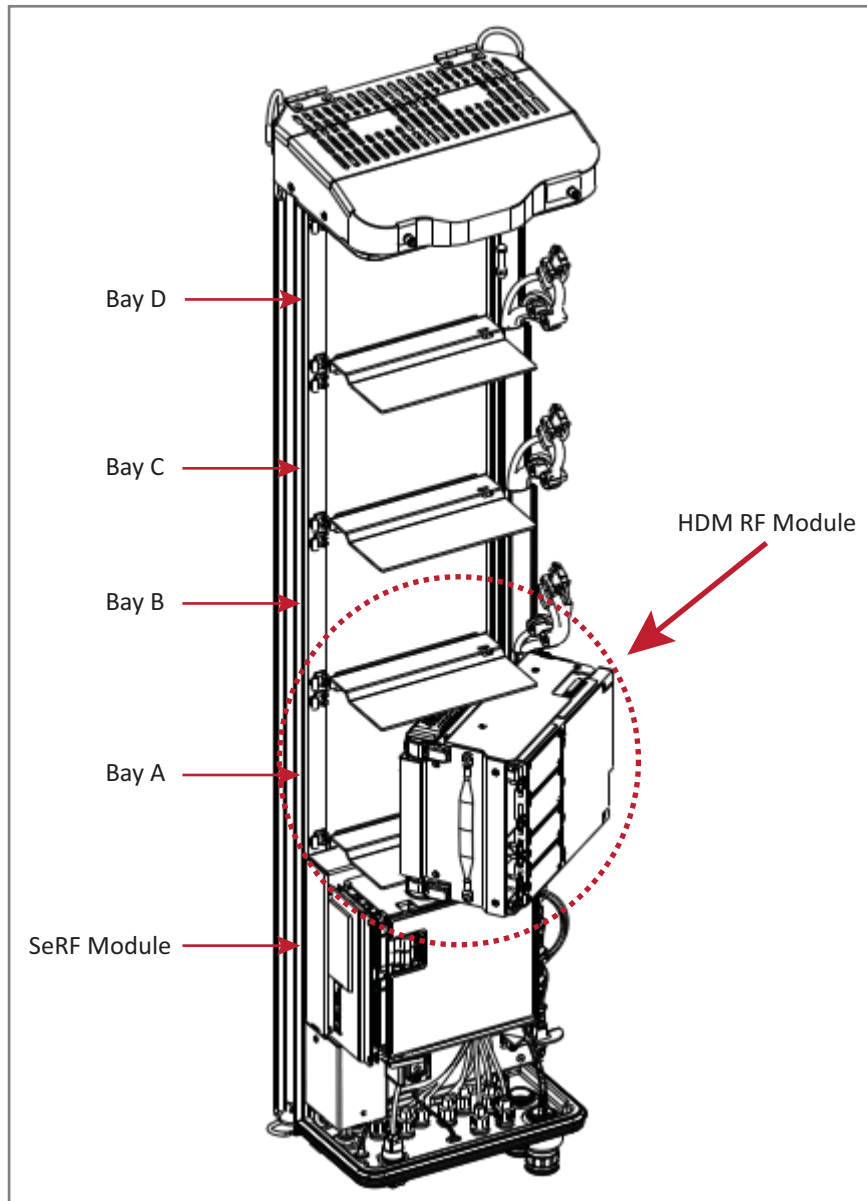**Figure 21.** Installing a Single-Bay RF Module

Bay D

Bay C

Bay B

HDM RF Module

Bay A

SeRF Module

Figure 22. Installing an HDM RF Module
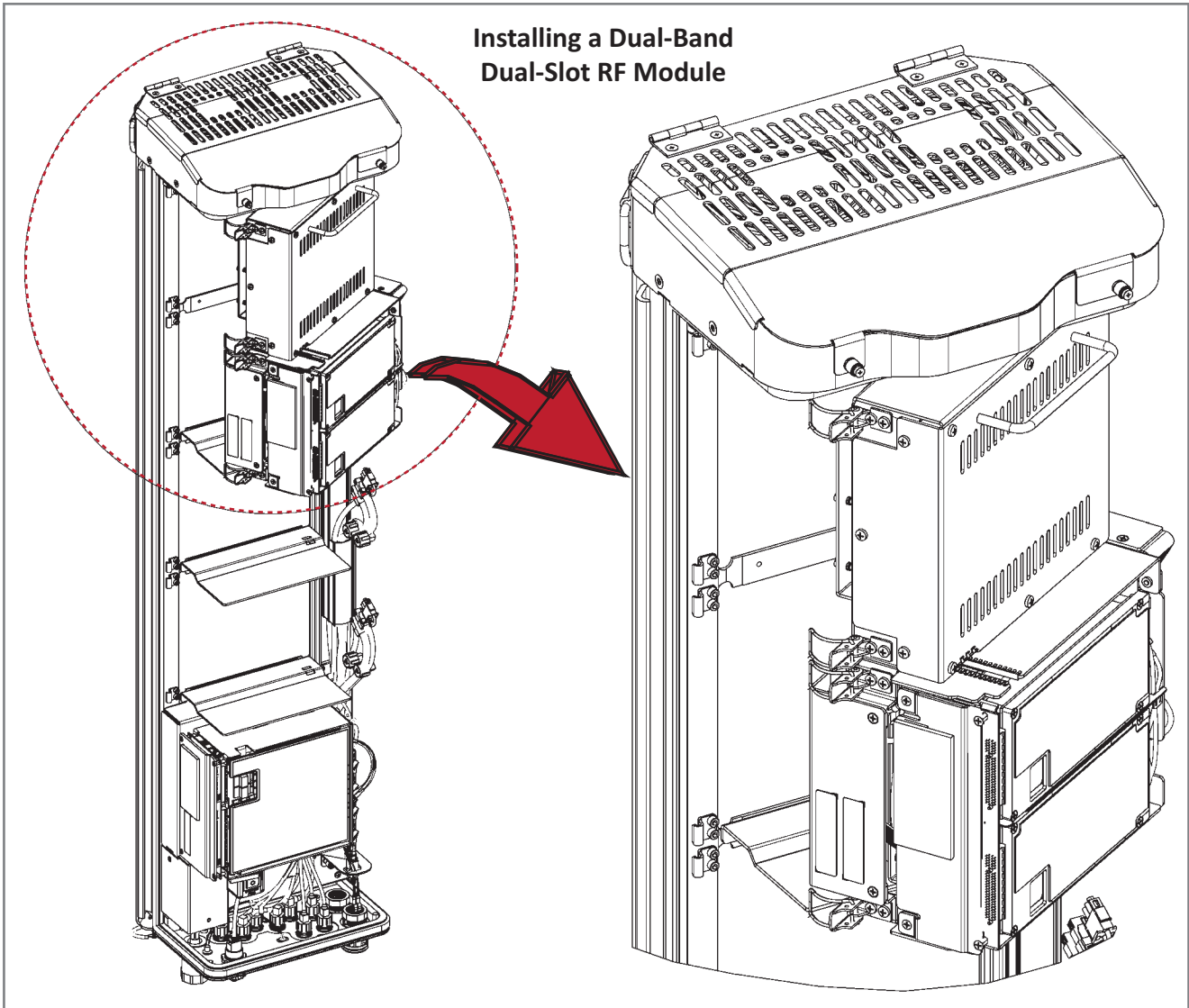
**Installing a Dual-Band
Dual-Slot RF Module**

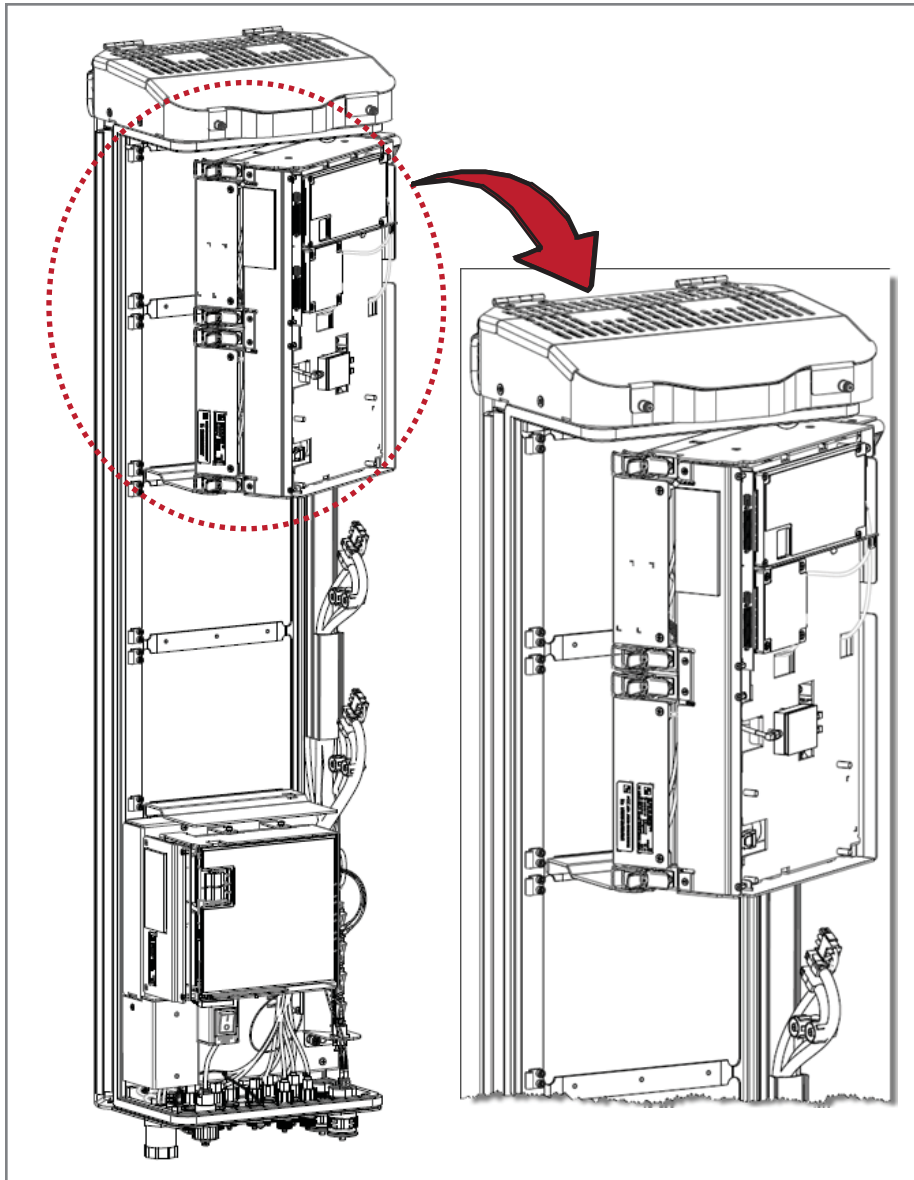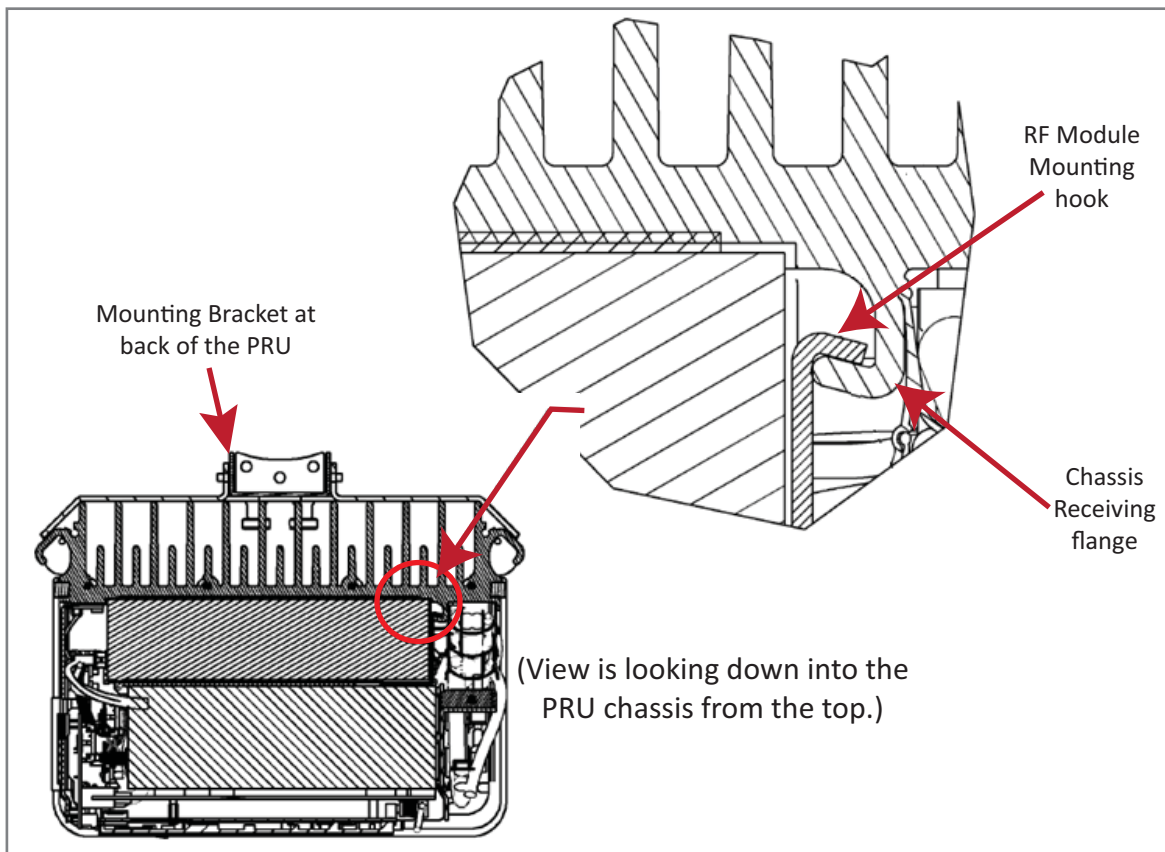**Figure 23.** Installing a Dual-Bay RF Module

Figure 24. Installing a Legacy Dual-Bay 40W RF Module

3 Align the Mounting Hook on the module with the receiving flange on the PRU heat sink, and then slide the RF Module in toward the flange until it can go no further.

4 Push the left edge of the RF Module back and into the PRU chassis until it can go no further, as shown in the following graphics:

- For Single-Bay RF Modules, see Figure 25 on page 96.

- For HDM RF Modules, see Figure 26 on page 97.

- For Dual-Bay RF Modules, see Figure 27 on page 98, which uses the Legacy Dual-Bay 40W RF Module as an example.

⚠️ **Make sure the RF Module is seated correctly in the Module shelf. Incorrect alignment of the RF Module can cause the RF Module to fail due to overheating.**

- **The front edge of the RF Module should be parallel with the shelf above it.**

- **The Mounting Hook on the RF Module should be fully engaged with the Receiving flange on the Remote Unit chassis.**

- **An incorrectly seated RF Module makes closing the Prism door difficult. If you later cannot shut the Remote Unit door, verify that the RF Module is installed correctly.**

Single-Slot
RF Module

Push the RF Module
back into the chassis
until it can go no further.
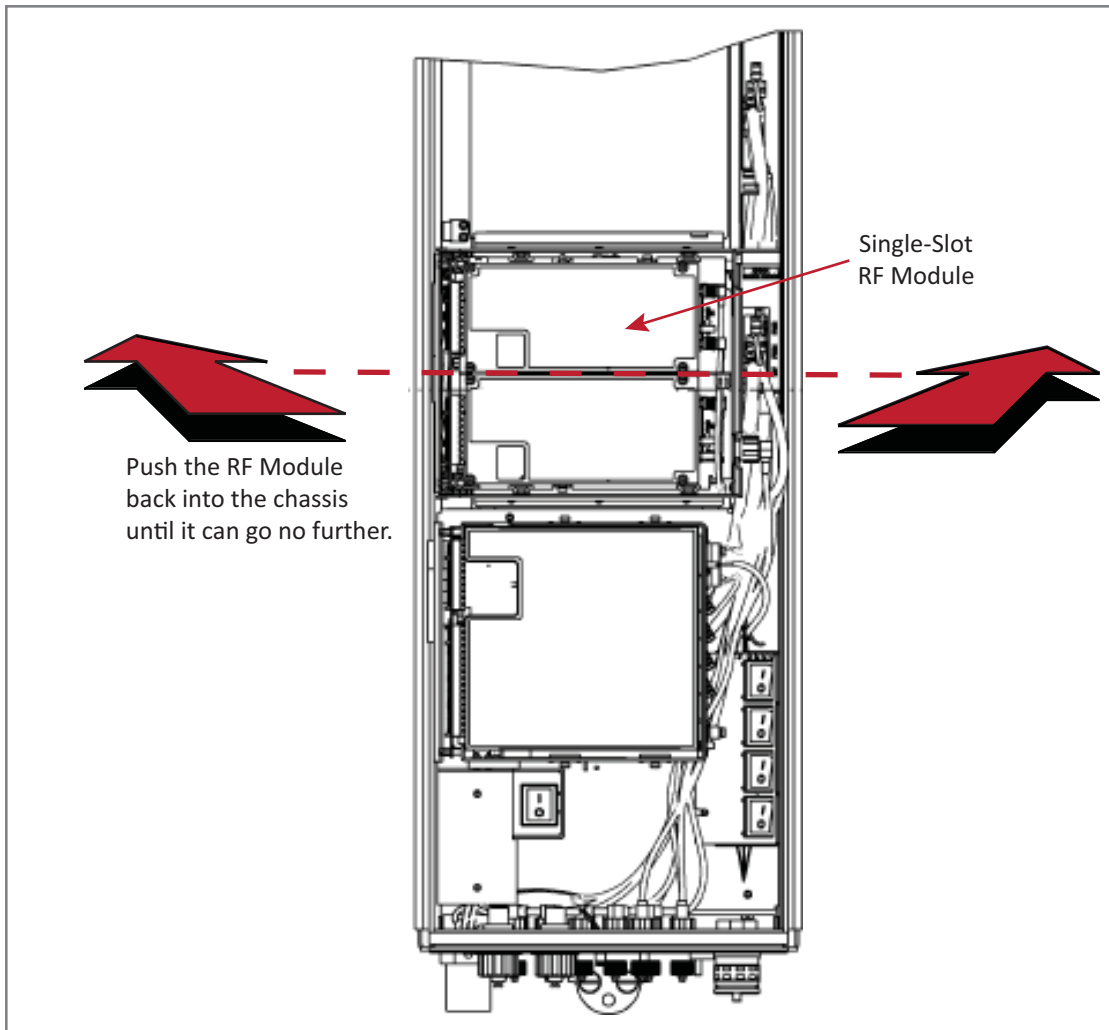
Figure 25. Seating a Single-Bay RF Module

HDM
RF
Module

Push the HDM RF Module
back into the chassis
until it can go no further.
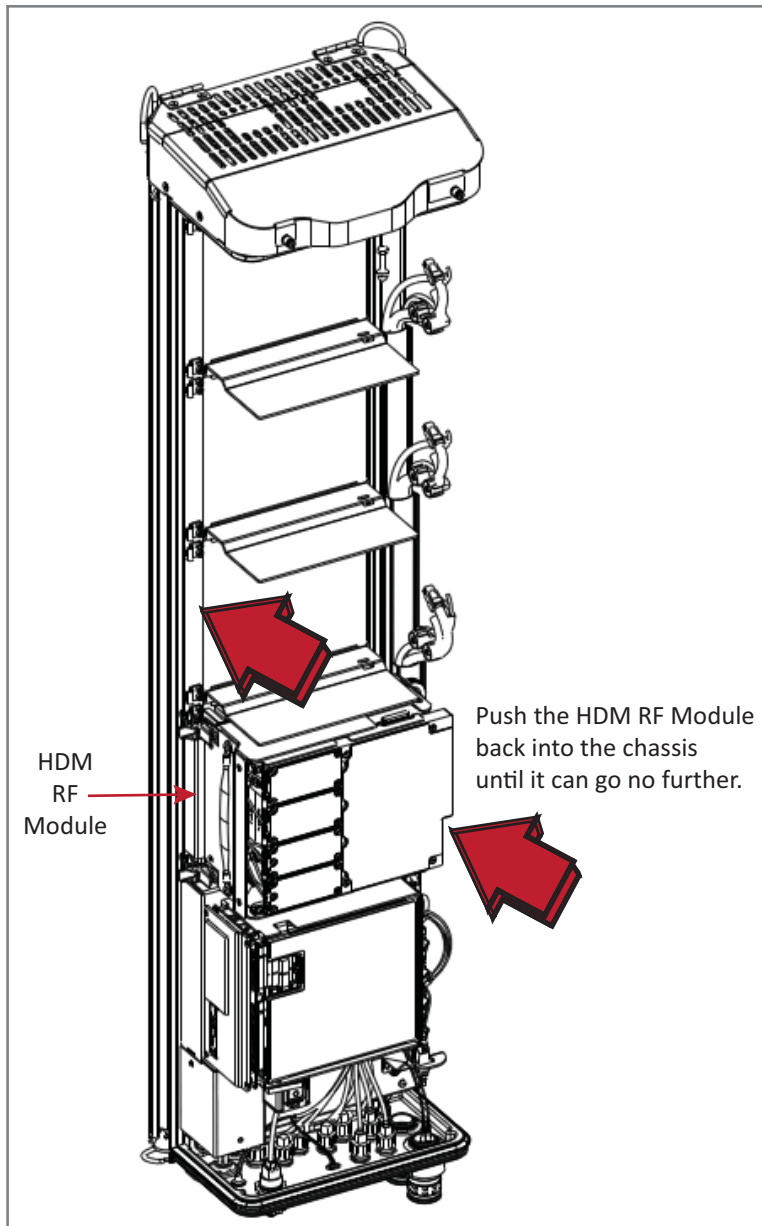
Figure 26. Seating an HDM RF Module
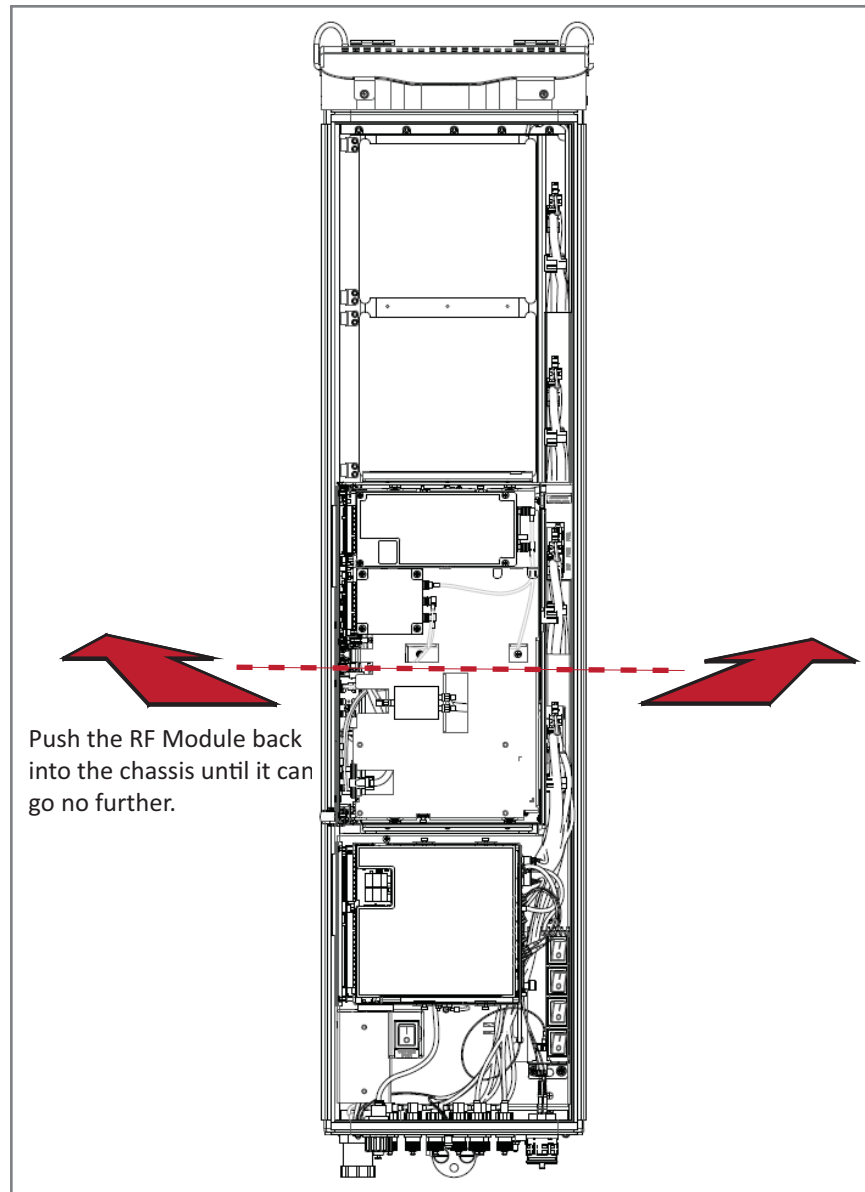
Figure 27. Seating a Dual-Bay RF Module

SECURE RF MODULE LATCHES

To secure the module latches on the left side of the RF Module, do one of the following, as appropriate for the RF Module being installed:

- "Connect Latches on Single-Bay and HDM RF Modules" on page 99
- "Connect Latches on Dual-Bay RF Modules" on page 100.

Connect Latches on Single-Bay and HDM RF Modules

For Single-Bay and HDM RF Modules, secure two latches, as shown in Figure 28.

Two latches on
Single-Slot
RF Modules

Two latches on
HDM RF Modules
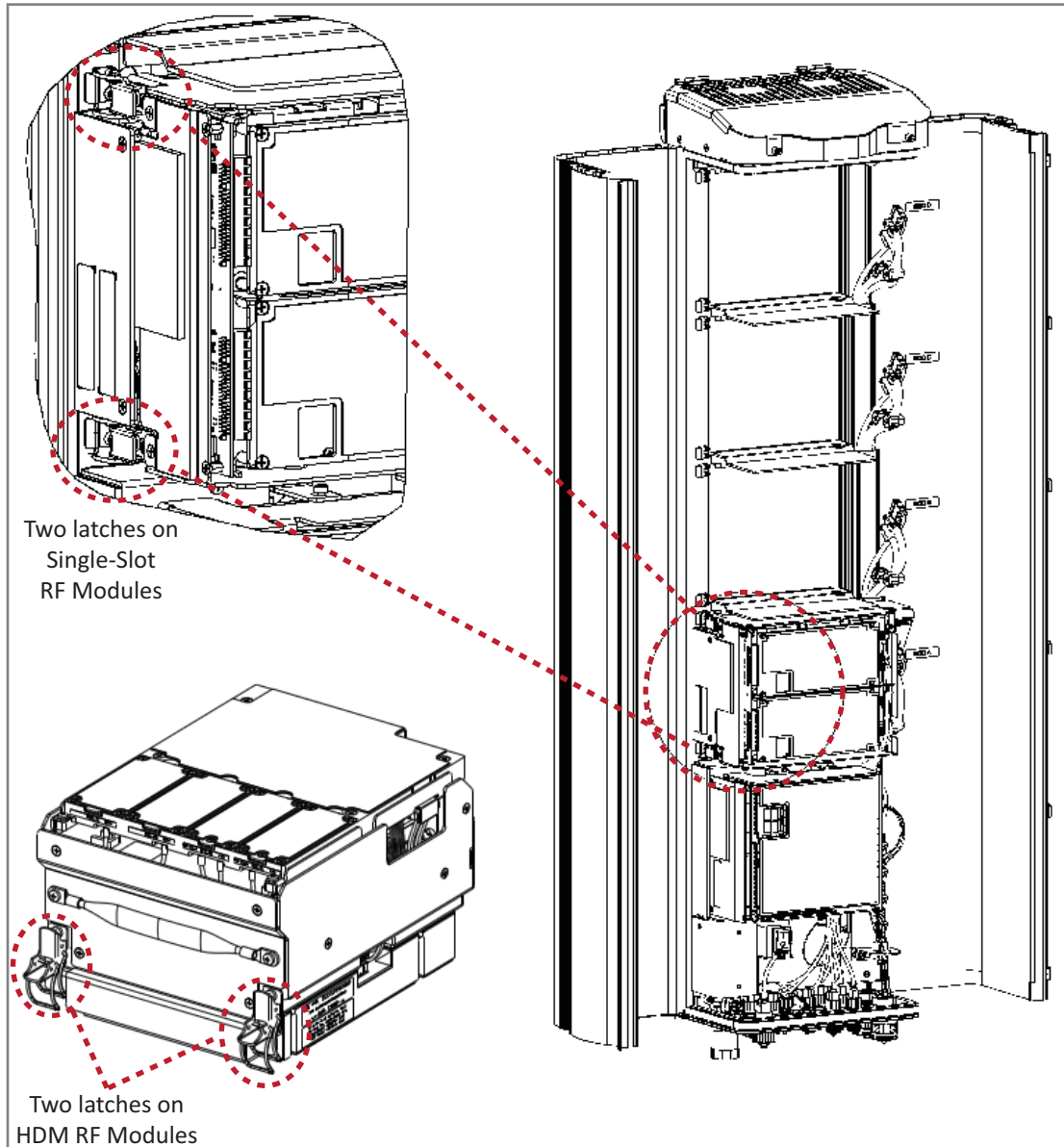
Figure 28. Latches on Single-Bay and HDM RF Modules

Connect Latches on Dual-Bay RF Modules

For Dual-Bay RF Modules, secure four latches, as shown in Figure 29.

Four latches
in a
Dual-Band
Dual-Slot
RF Module
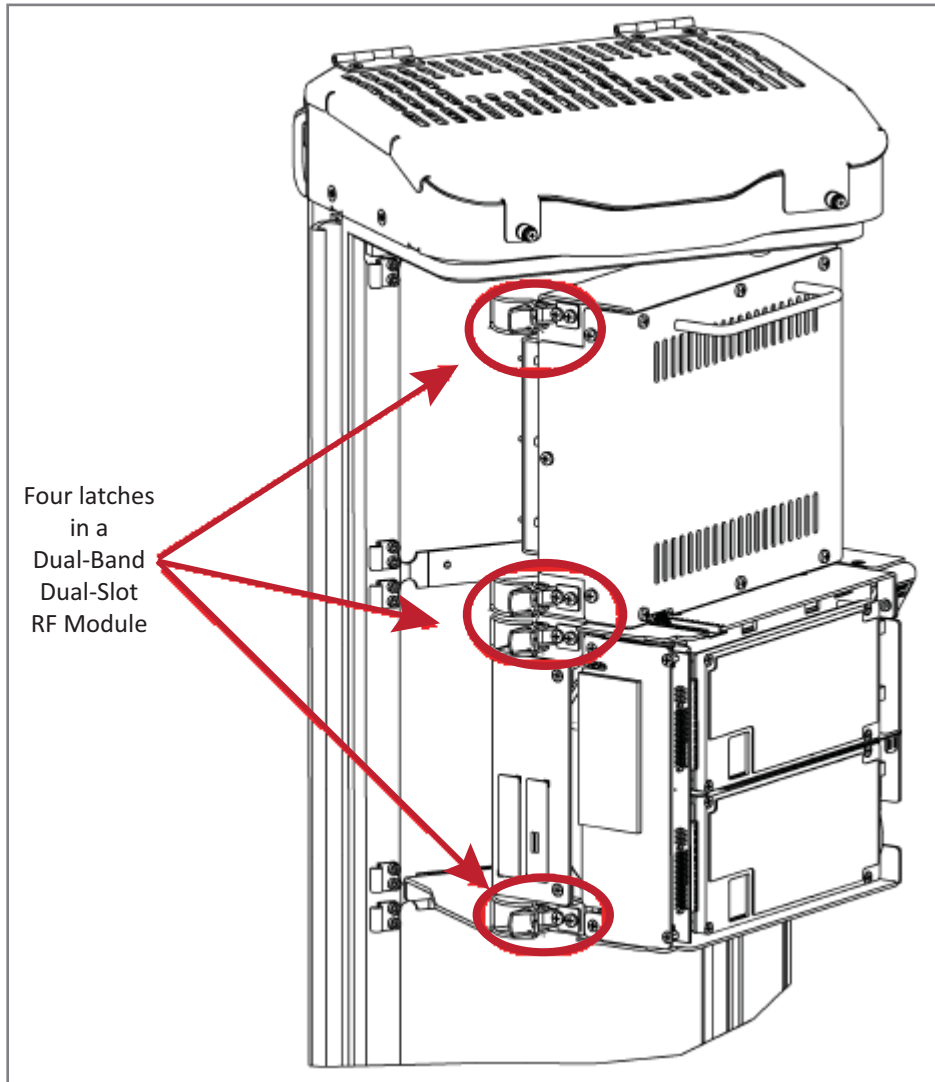
Figure 29. Dual-Bay RF Module Latches

Latches on Legacy Dual-Bay 40W RF Modules

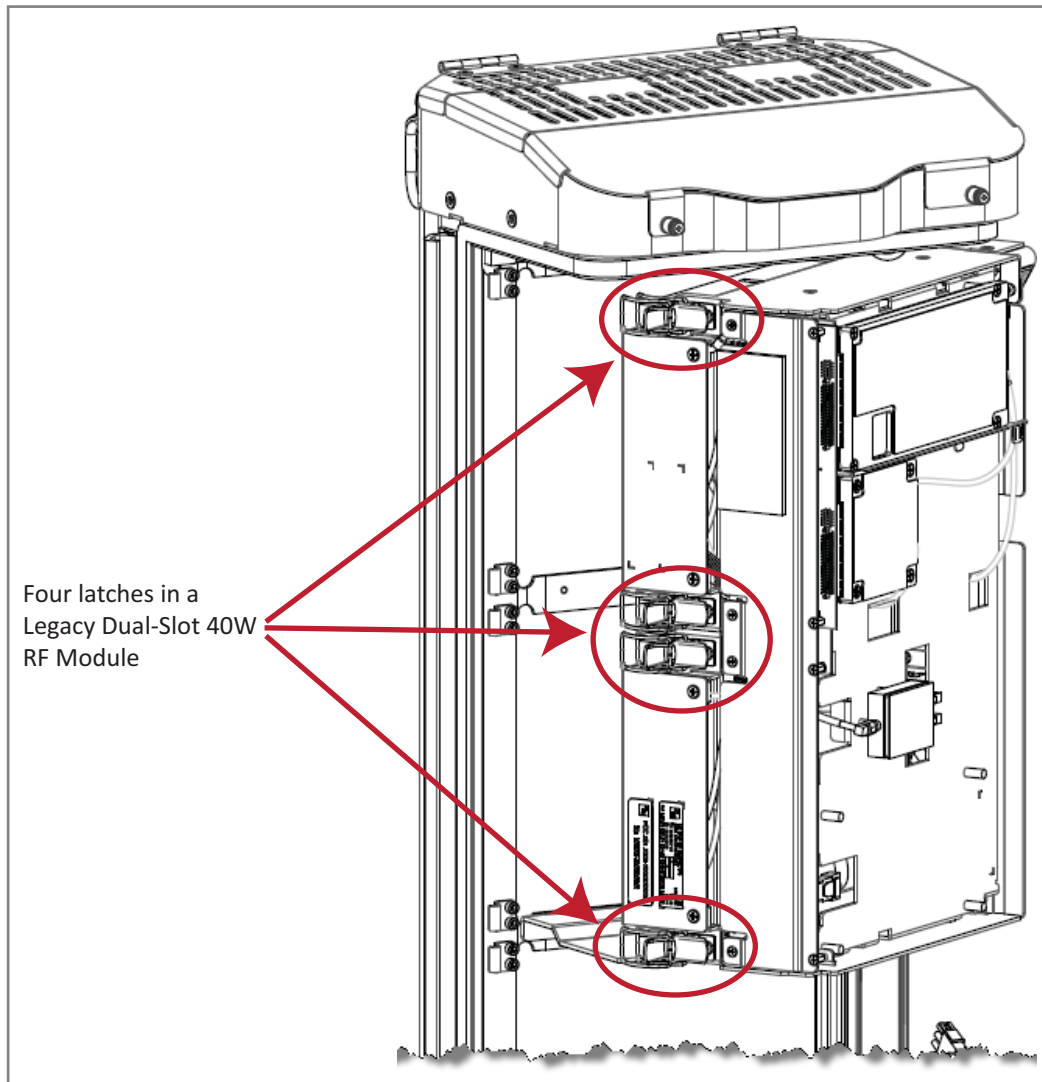For Legacy Dual-Bay 40W RF Modules, secure four latches, as shown in Figure 30.

Four latches in a Legacy Dual-Slot 40W RF Module

Figure 30. Legacy Dual-Bay 40W RF Module Latches

Verify that the RF Module Mounting Hook is Engaged

Verify that the RF Module Mounting Hook is engaged correctly by pulling the module away from the heat sink. The RF Module should not move. If the RF Module moves during this check, repeat all the steps starting at "Install the RF Module into the Prism Remote Chassis" on page 91 through this step.

CONNECT THE RF MODULE CABLES TO THE PRU CHASSIS

The steps to connect the RF Module cables have been separated into two different procedures; follow the steps that correspond to the RF Module being installed.

- "Connecting Cables in a Single-Bay RF Module Installation" on page 102

- "Connecting Cables in a Dual-Bay RF Module Installation" on page 107.

Connecting Cables in a Single-Bay RF Module Installation

1   Position the cables so that they are under the right edge of the RF Module, pointing up.

2   Follow the rules listed in "Understanding RF Cable Rules" on page 26.

3   Connect the RF Module cables, in the order shown below. As you work, refer to the graphic that corresponds to the RF Module being installed into a single bay of the PRU: for a Single-Bay RF Module, refer to Figure 31 on page 103, and for an HDM RF Module, refer to Figure 32 on page 104 and Table 25 on page 105.

   a   Connect the MOD *N* TX0/RX0 cable to the RF Module (the RF cables and connectors are referred to as MOD *N* TX0/RX0 where *N* equals **A**, **B**, **C**, or **D**).

      i   Insert the N-Style Plug of the MOD N TX0/RX0 cable into the TX0/RX0 N-Style Jack of the RF Module.

      ii   Turn the coupling nut of the plug clockwise to thread onto the jack and finger-tighten.

      iii   Torque coupling nut to 8 ±1 in-lbs to ensure full connection.

Insufficient torque applied to RF Module connections can result in elevated insertion/return loss and higher than normal VSWR reported by the system.

   b   Connect the MOD *N* TX1/RX1 cable to the RF Module (the RF cables and connectors are referred to as MOD *N* TX1/RX1 where *N* equals **B**, **C**, or **D**).

      i   If a TX1/RX1 RF Module connection is available, insert the N-Style Plug of the MOD N TX1/RX1 cable into the TX1/RX1 N-Style Jack of the RF Module. If RF Module connection is not available, constrain the MOD N TX1/RX1 cable to accompanying cables using a tie wrap so it cannot be pinched or prevent the Remote Unit door from closing.

      ii   Turn the coupling nut of the plug clockwise to thread onto the jack and finger-tighten.

      iii   Torque coupling nut to 8 ±1 in-lbs to ensure full connection.

Insufficient torque applied to RF Module connections can result in elevated insertion/return loss and higher than normal VSWR reported by the system.
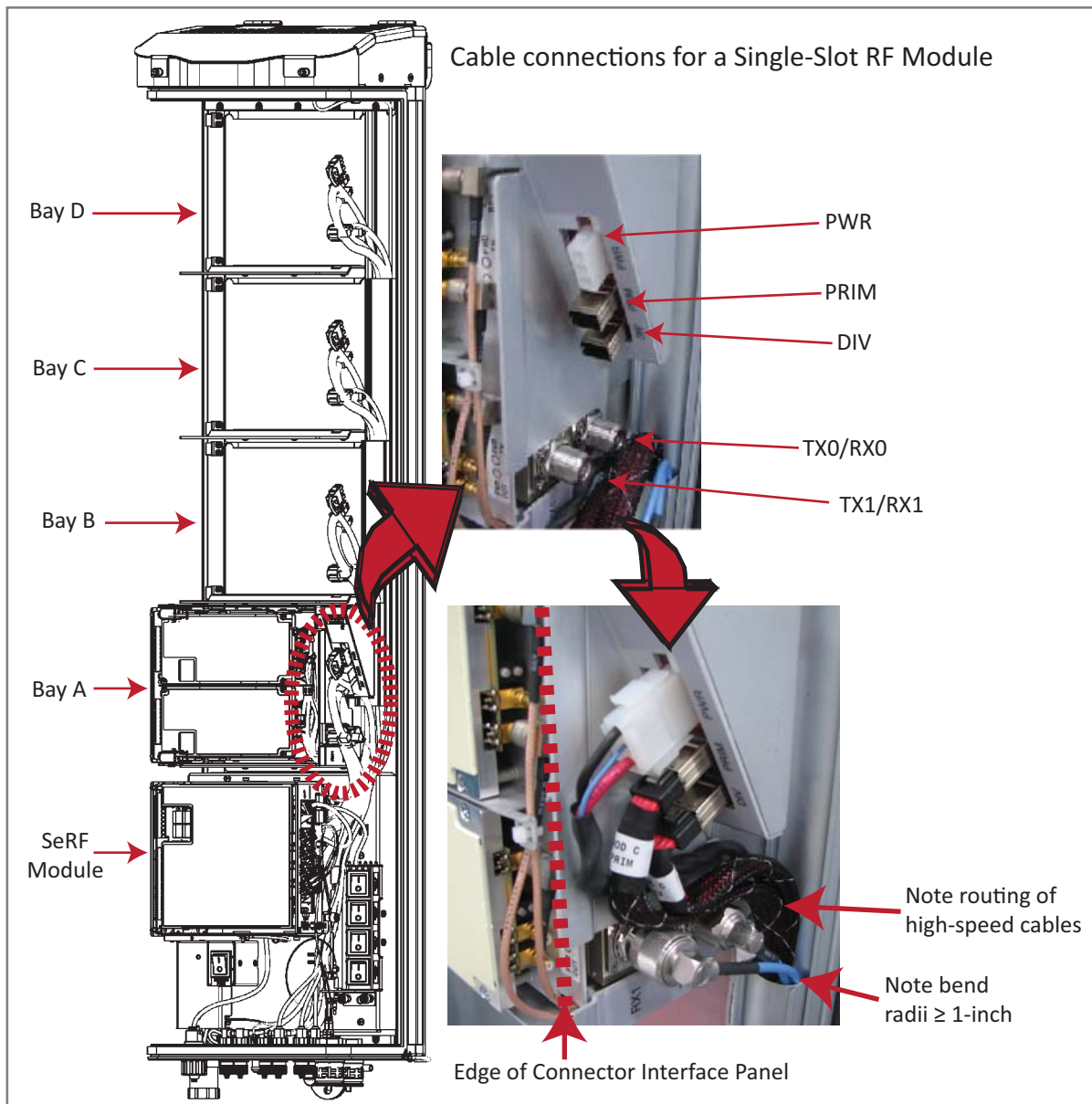
Figure 31. Cable Connections for Single-Bay RF Modules

⚠️ **Ensure that all cable bends are below the top edge of the Connector Interface Panel as indicated by the dashed line in the preceding figure. Failure to correctly position the cables could inhibit closing the Remote Unit door, which can result in damage to the cables**

Cable Connections for an HDM RF Module

DATA 0 (PRIM)

DATA 1 (DIV)

POWER

TX1/RX1

TX0/RX0

Cable Connection Notes
• Always connect the Power cable.
• Always connect the two LVDS cables: PRIM and DIV.
• SISO requires one RF cable (TX0/RX0).
• MIMO and Dual-Band require two RF cables
  (TX1/RX1 and TX0/RX0).

Figure 32. Cable Connections for HDM RF Modules

Table 25 lists how to correctly connect HDM RF Modules to the Antenna ports on the bottom of the Remote Unit.

Table 25. *HDM Antenna Port Mapping*

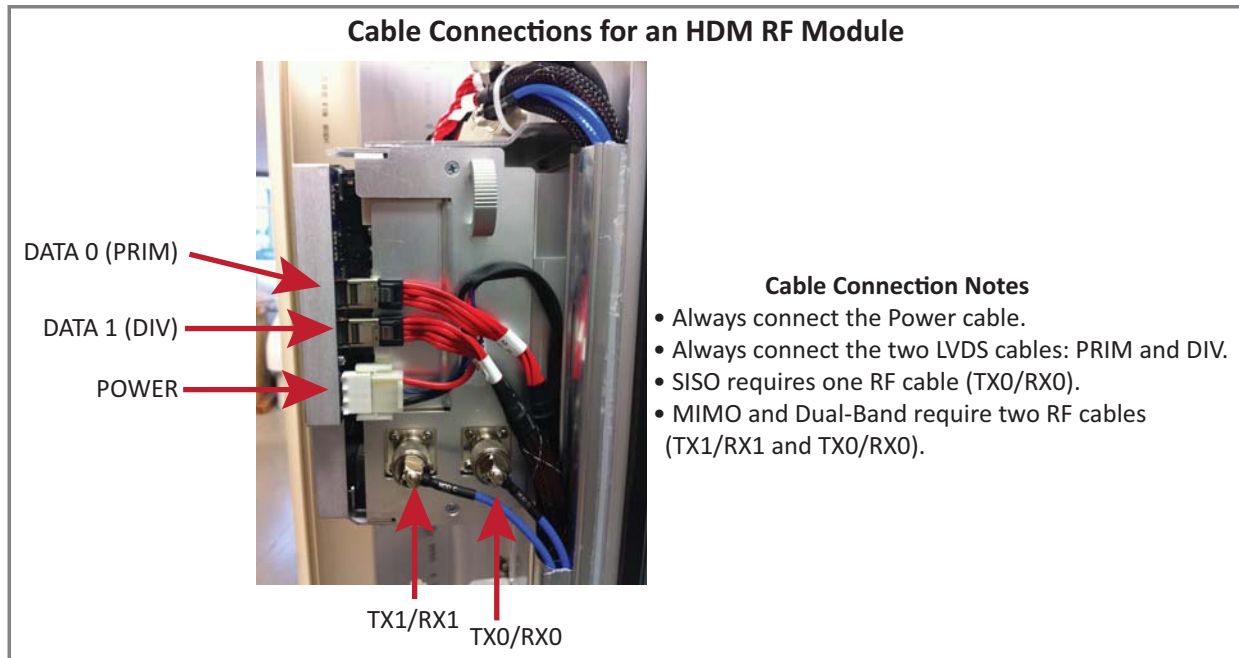| RF Module Catalog #	Description	TX0/RX0	TX1/RX1
FWP-L4MT000MOD	20W 700 LABC Module, MIMO HDM, Single-Bay	Path 1	Path 2
FWP-U4MT000MOD	20W 700 uC Module, MIMO HDM, Single-Bay	Path 1	Path 2
FWP-L4MTU4MMOD	20W 700 LABC/700uC, Dual, Single-Bay	700 LABC	700 uC
FWP-44MT000MOD	20W 800 MIMO, Single Bay, with two External Filters	Path 1	Path 2
FWP-441T841MOD [1]	20W 800 SMR/ 1900 PCS, Dual RF Module	1900	800
FWP-B4MT000MOD	20W 850 Dual, MIMO, Single Bay	Path 1	Path 2
FWP-C4MT000MOD	20W 850 Cell/1900 PCS, Dual, Single-Bay	1900	850
FWP-B410000MOD	20W 850 Wideband Cell, Non-Diversity	Path 1	NA
FWP-B810100MOD	40W 850 Wideband Cell, Non-Diversity	Path 1	NA
FWP-84MT000MOD	20W 1900 PCS Dual MIMO, Single-Bay	Path 1	Path 2
FWP-84MTA4MMOD	20W 1900/2100 Dual, Single Bay	2100	1900
FWP-84MTZ4MMOD	20W Dual PCS 1900/2100 AWS-3, Non-Diversity	2100	1900
FWP-8416000MOD	20W 1900 PCS SISO, Non-Diversity	Path 1	NA
FWP-881T000MOD	40W 1900 PCS SISO, Non-Diversity	Path 1	NA
FWP-A416000MOD	20W 2100 AWS, Non-Diversity	Path 1	NA
FWP-A4MT000MOD	20W 2100 AWS MIMO, Non-Diversity	Path 1	Path 2
FWP-A81T000MOD	40W 2100 AWS SISO, Non-Diversity	Path 1	NA
FWP-Z4MT000MOD	20W 2100 AWS-3 MIMO	Path 1	Path 2
FWP-Z416000MOD	20W 2100 AWS-3 SISO, Non-Diversity	Path 1	NA
FWP-W4MT000MOD	20W 2300 WCS, MIMO	Path 1	Path 2
FWP-T4MT000MOD-L	20W 2500 TDD Low, MIMO, 2496.5-2571.5 MHz	Path 1	Path 2
FWP-T4ST000MOD-H	20W 2500 TDD High, SISO, 2615-2690 MHz	Path 1	NA
FWP-T4ST000MOD-L	20W 2500 TDD Low 2496.5-2571.5, SISO, Non-Diversity	Path 1	NA

1 A 20W 800 SMR/ 1900 PCS, Dual RF Module RF Module (FWP-441T841MOD) requires a FlexWave Notch Filter (FWP-SPRINTFILTER) between the Remote Unit and the antenna to provide protection from spurious emissions in the Public Safety band below 861.35 MHz and the Cellular band above 869.5 MHz. Information on how to install the Notch Filter is provided in "FlexWave Notch Filter (FWP-SPRINTFILTER)" on page 114.

a Connect the LVDS Cables to the RF Module—the LVDS cables labeled PRIM and DIV should always either be connected to a RF Module or strain relieved to adjacent cables, as this protects the cable against damage through misplacement. Maintain adequate strain-relief distances from the connection points to the RF Module.

   i Connect the MOD N DIV LVDS Cable to the DIV receptacle of the RF Module by inserting and sliding in until fully seated. Full insertion can be recognized by an audible click as the LVDS Cable Connector locks into the RF Module Receptacle.

   ii Connect the MOD N PRIM LVDS Cable to the PRIM connector, following the same steps as above. Full insertion can be recognized by an audible click as the LVDS Cable Connector locks into the RF Module Receptacle.

   iii Ensure the two LVDS cables are fully seated and latched into their respective receptacles on the RF Module by lightly pulling outward on the connectors. If fully seated and locked into position, the cable connectors will not slide back out.

b Connect the Power cable to the PWR receptacle of the RF Module.

   i Ensure that the DC power switch that corresponds to the bay(s) in which the RF Module is to be installed is in the Off position (see "Check the DC Power Switch for the Module Bay" on page 89).

   i Insert the Power cable into the PWR connector, and slide it in until fully seated. Full insertion can be recognized by an audible click as the Power Cable Connector locks into the RF Module Receptacle.

   ii Verify that the Power cable is fully seated by lightly pulling back on it while making sure to not depress the release triggers on the ends of the connector. When fully inserted, the cable should not be able to be removed from the receptacle.

⚠ **Maintain adequate strain relief distances from the connection points to the RF Module.**

2 Repeat all the steps in "Install the RF Module(s)" on page 86 to install other RF Modules.

Connecting Cables in a Dual-Bay RF Module Installation

1 Position the cables so that they are under the right edge of the RF Module, pointing up.

2 Follow the rules listed in "Understanding RF Cable Rules" on page 26.

3 Connect the RF Module cables, working from the bottom connector up, as described below.

As you work, refer to the graphic that corresponds to the RF Module being installed in the Dual-Bay: for a Dual-Bay RF Module, refer to Figure 33 on page 108, and for a Legacy Dual-Bay 40W RF Module, refer to Figure 34 on page 109.

a Connect the MOD *N* TX1/RX1 cable to the N-Style RF connector on the Dual-Bay RF Module (the RF cables and connectors are referred to as MOD *N* TX1/RX1 where *N* equals **B**, **C**, or **D**).

i Constrain the MOD *N* TX1/RX1 cable of the lower RF Module bay to accompanying cables using a tie wrap so it cannot be pinched or prevent the Remote Unit door from closing.

ii Connect the MOD *N* TX1/RX1 cable to the TX1/RX1 N-Style Jack of the upper RF Module Bay.

iii Turn the coupling nut of the plug clockwise to thread onto the jack and finger-tighten.

iv Torque coupling nut to 8 ±1 in-lbs to ensure full connection.

Insufficient torque applied to RF Module connections can result in elevated insertion/return loss and higher than normal VSWR reported by the system.
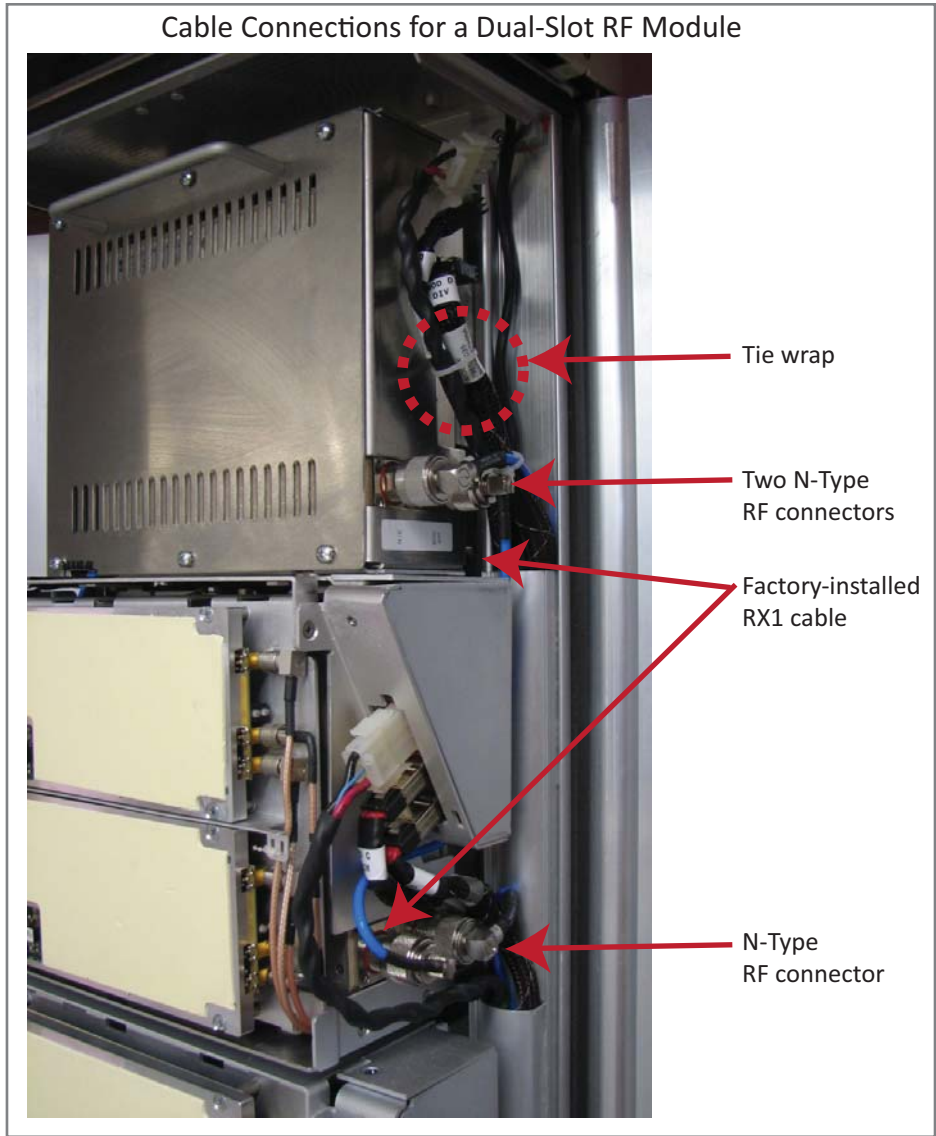
Cable Connections for a Dual-Slot RF Module

Tie wrap

Two N-Type
RF connectors

Factory-installed
RX1 cable

N-Type
RF connector

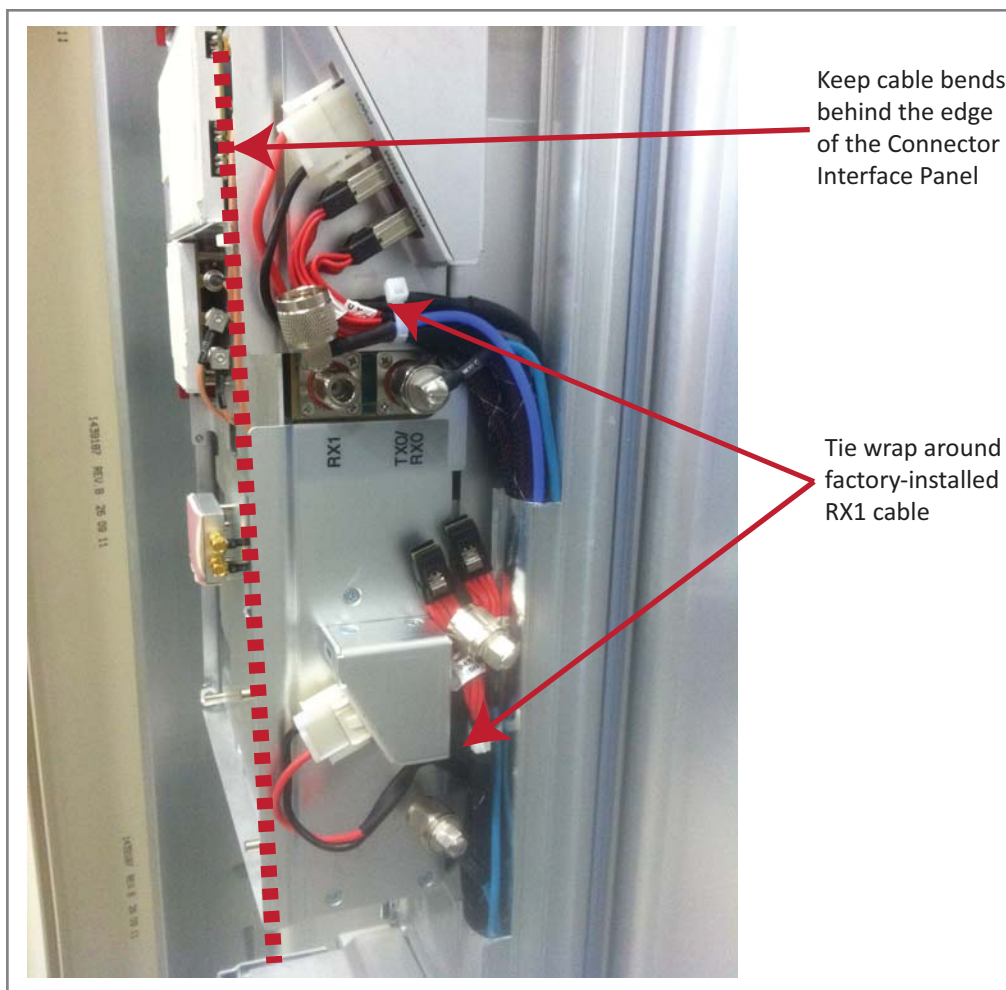**Figure 33.** Cable Connections for Dual-Band Dual-Bay RF Modules

Figure 34. Cable Connections for Legacy Dual-Bay 40W RF Modules

⚠️ **Ensure that all cable bends are below the top edge of the Connector Interface Panel as indicated by the dashed line in the preceding figure. Failure to correctly position the cables could inhibit closing the Remote Unit door, which can result in damage to the cables.**

b Connect the MOD *N* TX0/RX0 cable to the RF Module (the RF cables and connectors are referred to as MOD *N* TX0/RX0 where *N* equals **A**, **B**, **C**, or **D**).

   i Insert the N-Style Plug of the MOD N TX0/RX0 cable into the TX0/RX0 N-Style Jack of the lower RF Module bay. If RF Module connection is not available, constrain the MOD N TX0/RX0 cable to accompanying cables using a tie wrap so it cannot be pinched or prevent the Remote Unit door from closing.

   ii Turn the coupling nut of the plug clockwise to thread onto the jack and finger-tighten.

   iii Torque coupling nut to 8 ±1 in-lbs to ensure full connection.

📝 **Insufficient torque applied to RF Module connections can result in elevated insertion/return loss and higher than normal VSWR reported by the system.**

    c   Connect the LVDS Cables to the RF Module—the LVDS cables labeled PRIM and DIV should always either be connected to a RF Module or strain relieved to adjacent cables, as this protects the cable against damage through misplacement. Maintain adequate strain-relief distances from the connection points to the RF Module.

        i   Connect the MOD N DIV LVDS Cable to the DIV receptacle of the RF Module by inserting and sliding in until fully seated. Full insertion can be recognized by an audible click as the LVDS Cable Connector locks into the RF Module Receptacle.

        ii   Connect the MOD N PRIM LVDS Cable to the PRIM connector, following the same steps as above. Full insertion can be recognized by an audible click as the LVDS Cable Connector locks into the RF Module Receptacle.

        iii   Ensure the two LVDS cables are fully seated and latched into their respective receptacles on the RF Module by lightly pulling outward on the connectors. If fully seated and locked into position, the cable connectors will not slide back out.

    d   Connect the Power cable to the PWR receptacle of the RF Module.

        i   Ensure that the DC power switch that corresponds to the bay(s) in which the RF Module is to be installed is in the Off position (see "Check the DC Power Switch for the Module Bay" on page 89).

        ii   Insert the Power cable into the PWR receptacle of the lower RF Module bay, and slide it in until fully seated. Full insertion can be recognized by an audible click as the Power Cable Connector locks into the RF Module Receptacle.

        i   Insert the Power cable into the PWR receptacle of the upper RF Module bay, and slide it in until fully seated. Full insertion can be recognized by an audible click as the Power Cable Connector locks into the RF Module Receptacle. If the PWR receptacle is not available, constrain the Power cable to accompanying cables using a tie wrap so it cannot be pinched or prevent the Remote Unit door from closing.

        ii   Verify that the Power cable is fully seated by lightly pulling back on it while making sure to not depress the release triggers on the ends of the connector. When fully inserted, the cable should not be able to be removed from the receptacle.

4   Repeat all the steps in "Install the RF Module(s)" on page 86 to install other RF Modules.

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POWER ON THE RF MODULE(S) AND THE PRISM REMOTE UNIT

1   If necessary, power up the Remote Unit by turning its AC or DC power switch to On.

2   Ensure that the external Status LED on the bottom of the Remote Unit goes off. (At system startup, the Status LED is red to indicate that the Remote Unit is powering up and that the SeRF processor does not yet control the Remote Unit; the Status LED will remain red for no more than 4 minutes; for further information see "Remote Unit Status LED" on page 10.)

Bottom of an AC-Powered PRU   Bottom of a DC-Powered PRU
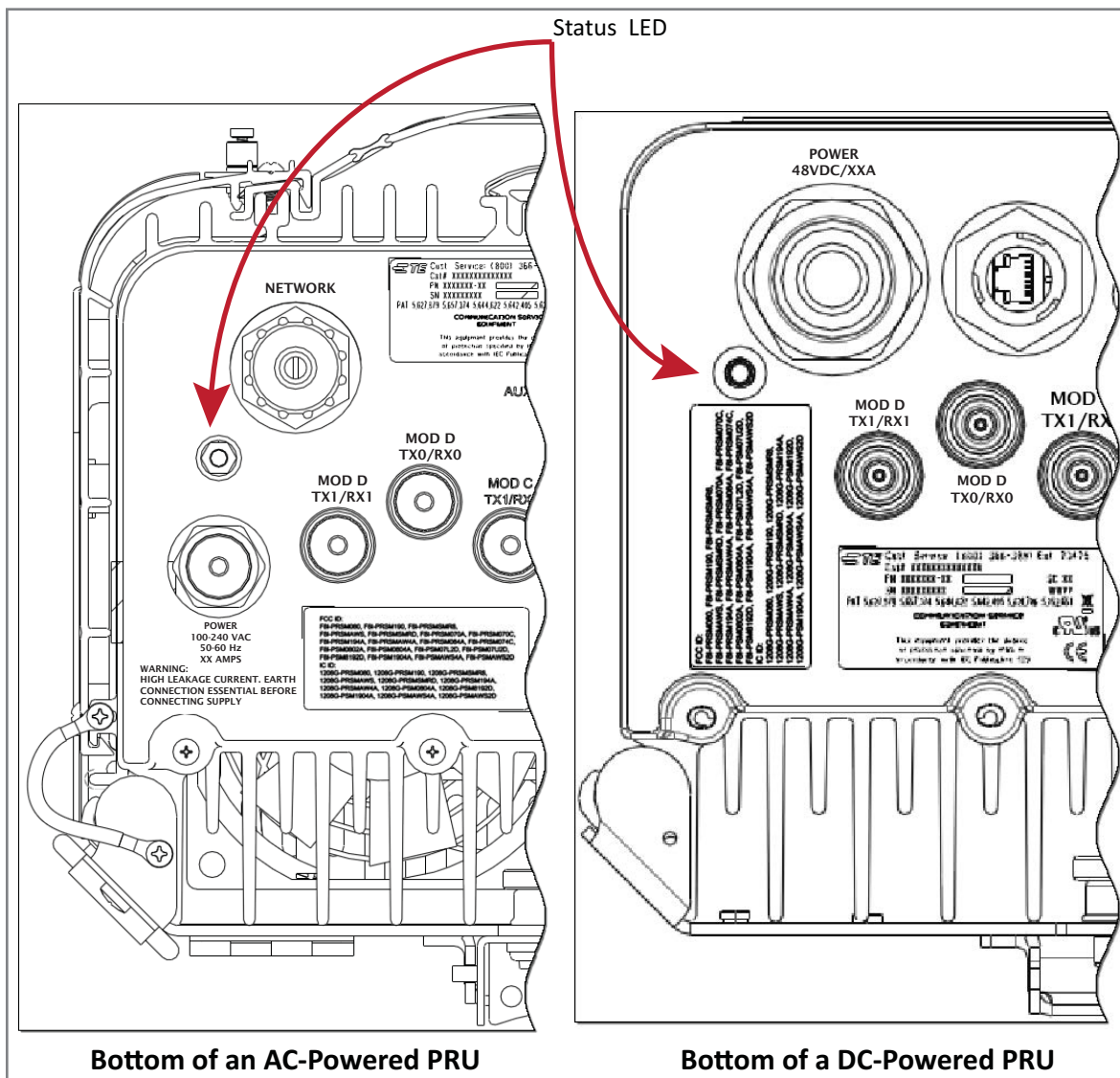
> The preceding graphic illustrates the Status LED on a Quad-Bay PRU. The Status LED for the Single-Bay, Dual-Bay, and Tri-Bay PRUs is in the same location and functions the same as the Status LED for the Quad-Bay PRU.

3 Follow the rules listed below to toggle the Power switch that corresponds to each RF Module to its ON position.

- For Dual-Band Dual-Bay RF Modules, use the Power switch for the lower module. For example, to power up a Dual-Bay RF Module in combined bays C+D in a Quad-Bay chassis, turn ON DC Power switch for Mod C; leave the DC Power switch for Mod D OFF.

- A Legacy Dual-Bay 40W RF Module uses the Power Supplies in both bays. If the Legacy Dual-Bay 40W RF Module is installed in bays C+D, turn ON the Power switch for Mod C and Mod D.
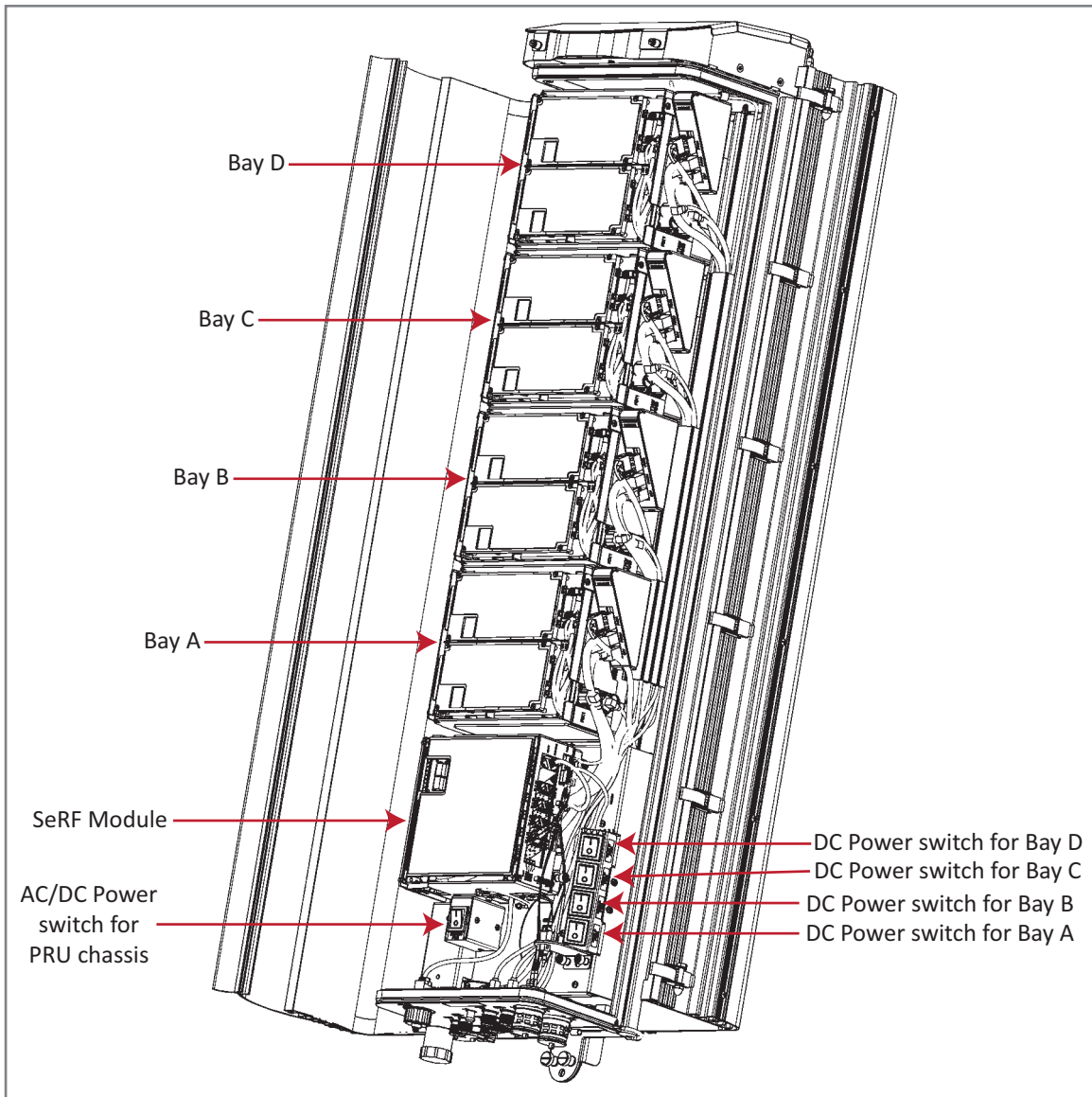

4 Verify that the LEDs for all installed RF Modules (located next to their respective connectors) are green. If any of the RF Module LEDs are not green, verify that each RF Module cable is seated fully in its respective connector. If after checking the cable connections and an LED is not green, contact CommScope for assistance (see "DCCS Global Technical Support" on page 123).

For further information on Status LEDs on HDM RF Modules, see "LEDS on Narrowband HDM RF Modules" on page 21 and "LEDS on Wideband and Fullband HDM RF Modules" on page 22.

CLOSE THE REMOTE UNIT DOOR AND SOLAR SHIELD

1   Do not slam the door to close it—gently swing the door shut and press it firmly closed.

2   Slowly close each door latch in a smooth fluid motion—do not allow the door latches to snap closed. For best results, starting with the top latch and working down to the bottom latch, use a flat-head screwdriver to close each latch as shown below.

3   Do not slam the Solar Shield to close it—gently swing it shut and press it firmly closed.
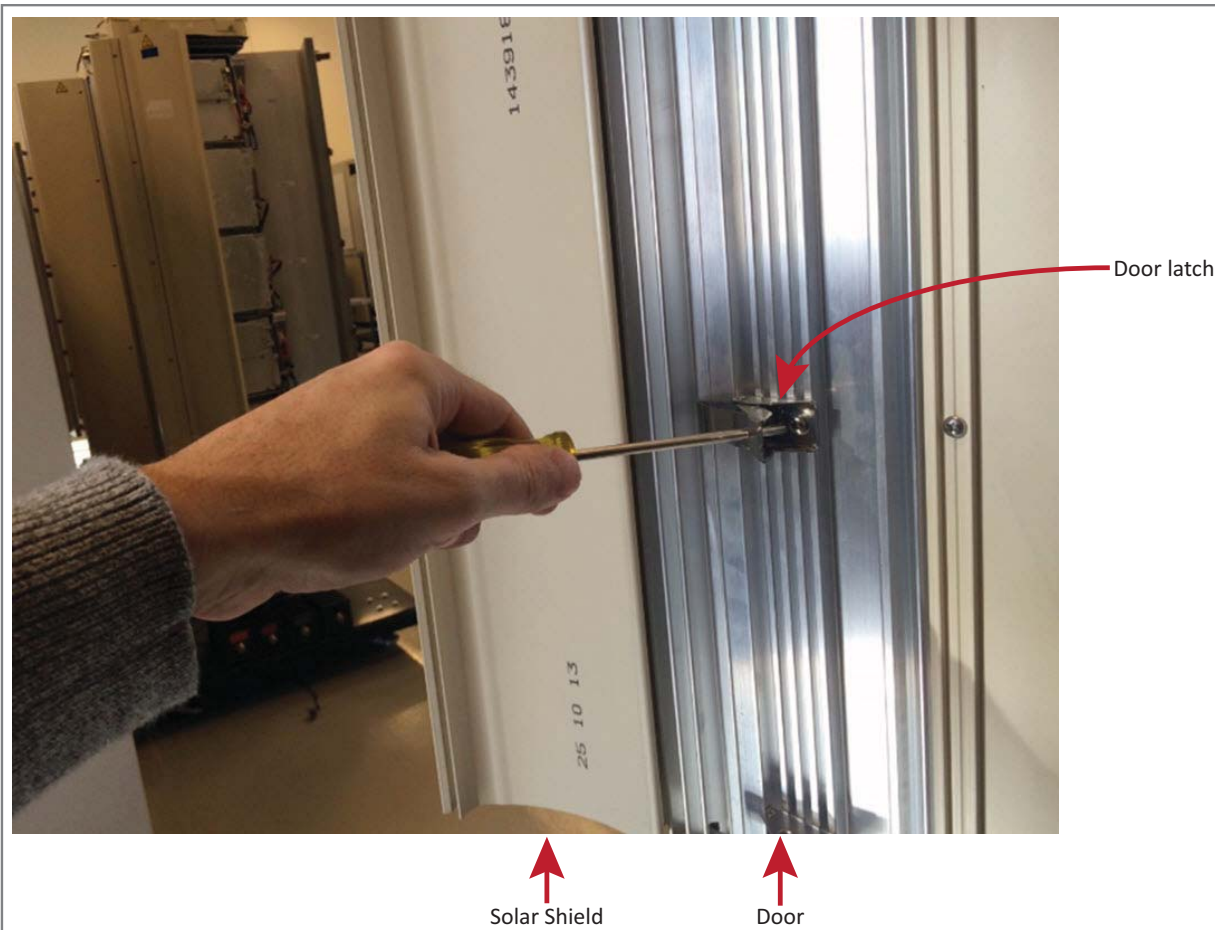
⚠ **Service personnel must confirm that the perimeter gasket and door-to-door gaskets are in place when closing the Remote Unit doors after servicing.**

⚠ **If the PRU door was allowed to snap closed, RF output from an HDM RF Module may be disabled for up to three minutes. Any alarms generated immediately following the opening/closing of the PRU Doors, such as Door Open, RF Power Low, System VSWR Fault, and LPA VSWR Fault, automatically clear once the RF has recovered. If alarms do not clear after three minutes, please contact CommScope for technical support; see "DCCS Global Technical Support" on page 123.**

PROVISION THE PRISM REMOTE UNIT

Refer to the current *EMS System Setup and Provisioning Guide* for information on configuring the PRU for a FlexWave Prism system.

FLEXWAVE NOTCH FILTER (FWP-SPRINTFILTER)

A FlexWave Notch Filter (FWP-SPRINTFILTER) ships with and is required in installations of the following RF Modules:

- Dual 20W SMR800 / PCS1900 RF Module (FWP-441T841MOD)

- Dual 20W 800 RF Module, MIMO, Single Bay, with two External Filters (FWP-44MT000MOD).

You install the Notch Filter between the Prism Remote Unit and the antenna to provide protection from spurious emissions in the Public Safety band below 861.35 MHz and the Cellular band above 869.5 MHz.

You use the same mounting methods to mount the Notch Filter as you used to mount the PRU. Take the following into consideration when planning the installation:

- The Notch Filter and its mounting brackets requires 19 inches of vertical space above the PRU (see and).

- The Notch Filter weighs 18 pounds; make sure the installation site can bear this additional weight.

- Mount the Notch Filter vertically with the N-type female connectors at the bottom.

- There are two Ground lugs on the Notch Filter, which are on the back of the two mounting brackets. Follow local practice to ground the Notch Filter.

- The notch filter must be connected to the 800 band module output before combining with other bands or connecting to an antenna.

Figure 35 provides the dimensions required to create a mounting template. (For full technical specifications, see Table 27 on page 122.)
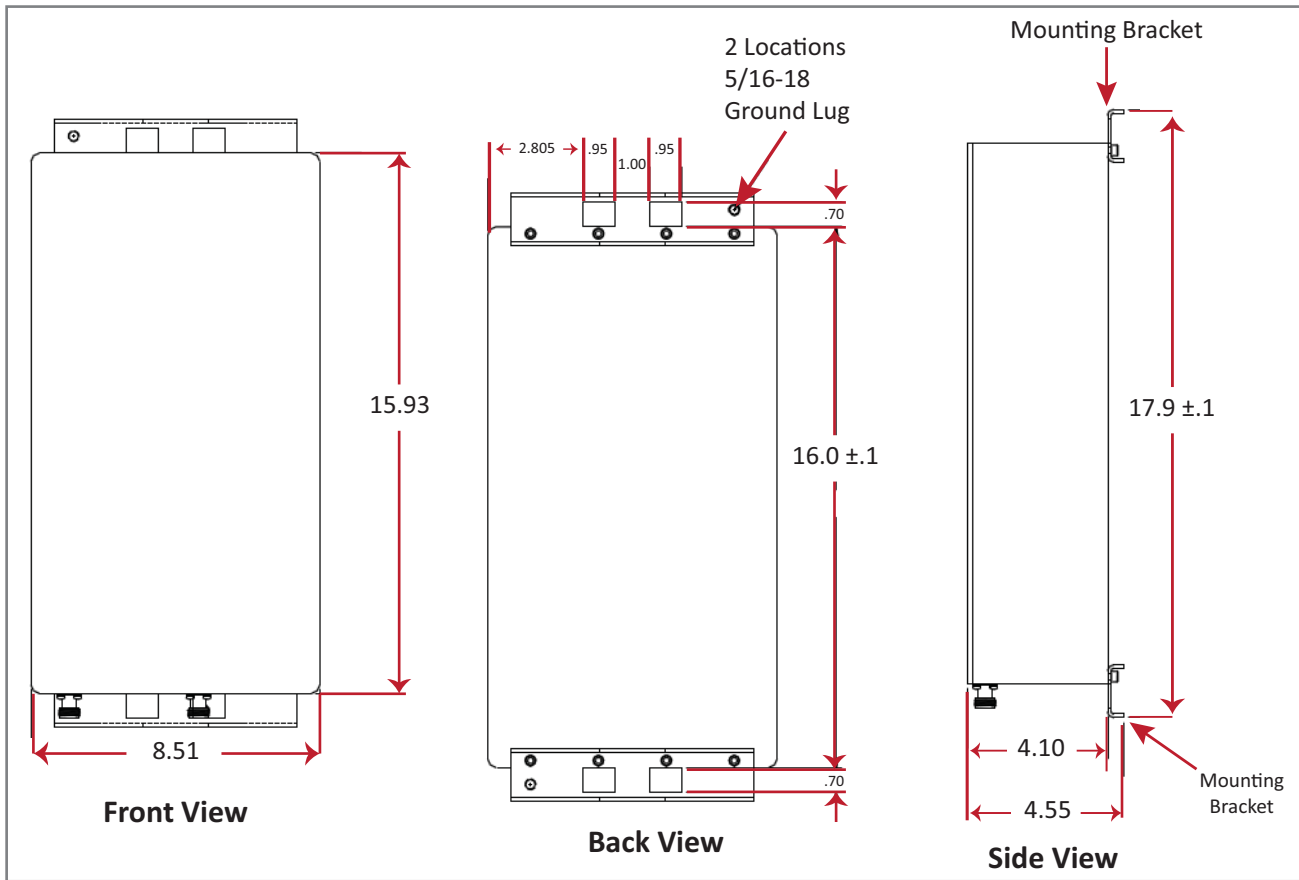

Figure 35. Notch Filter Mounting Dimensions

Figure 36 provides an example of how the dimensions required to mount the Notch Filter with a Quad-Bay PRU.
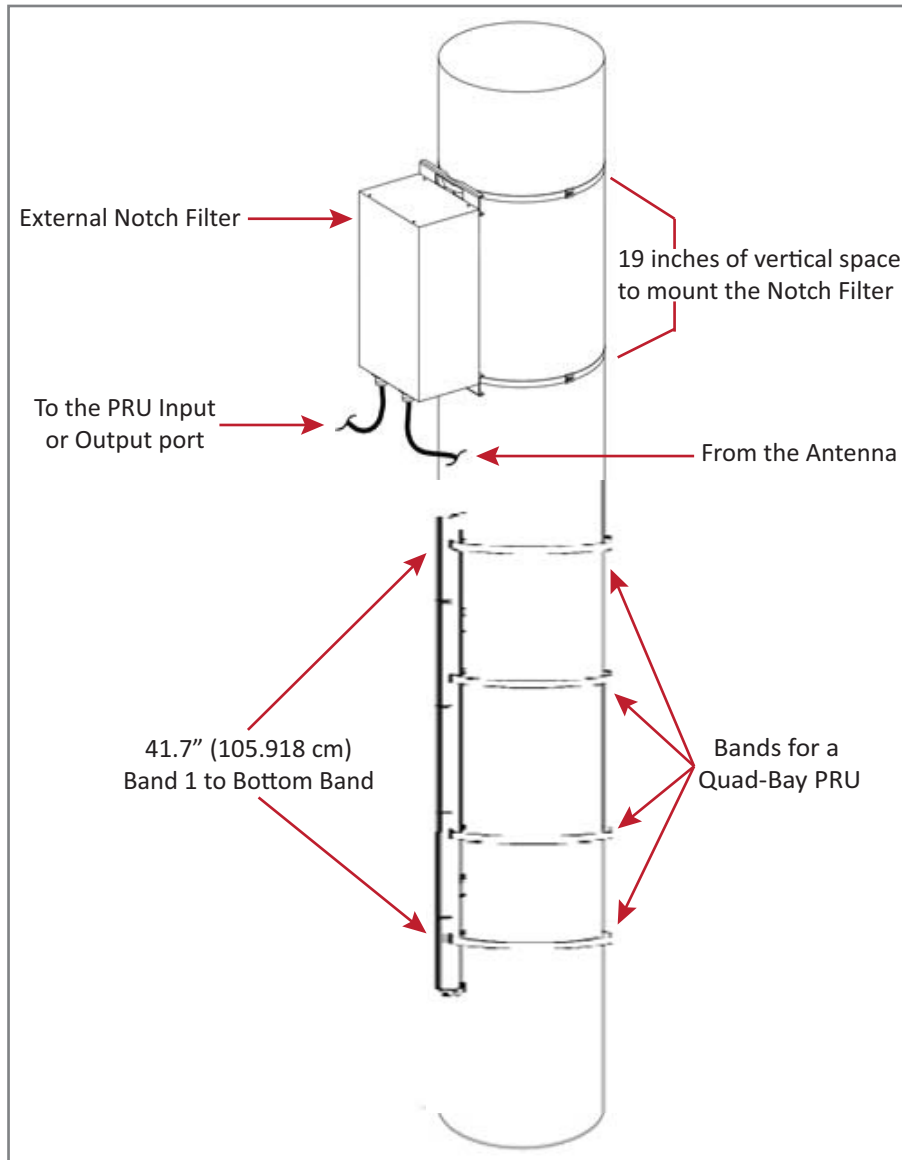

Figure 36. Pole Mounting a Quad-Bay PRU with a Notch Filter

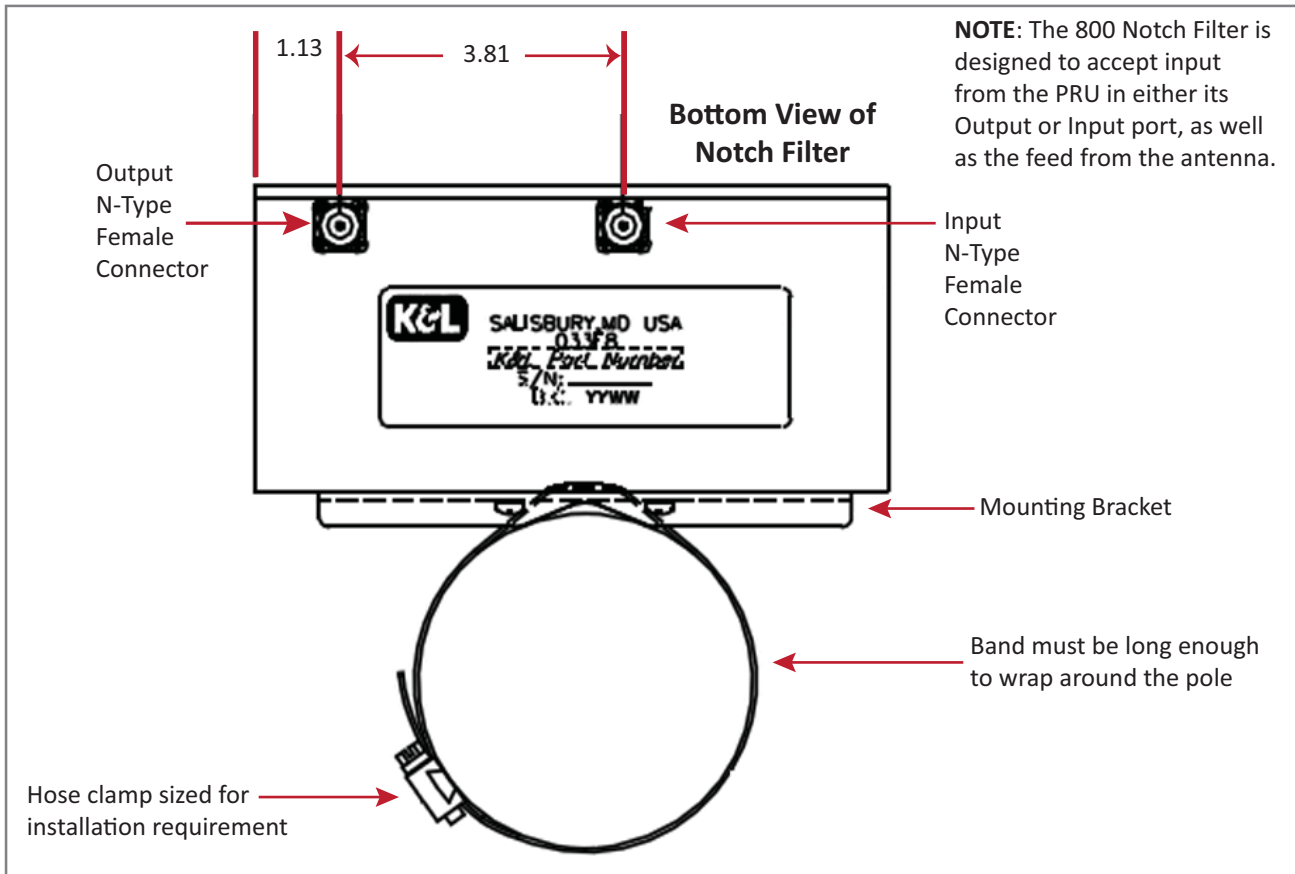Figure 37 illustrates how to pole mount the Notch Filter.

Figure 37. Pole Mounting a Notch Filter

FAN MODULE MAINTENANCE

Continuous airflow to cool the PRU is provided by the Fan Module that is mounted on the top of the PRU chassis. The cooling fans pull the heated air up from the chassis. The heated air is then exhausted through the vent openings at the top of the chassis. This constant movement of air requires that the Fan Module be placed on a maintenance schedule.

ANNUAL FAN CHECKUP

⚠ **A mechanical hazard exists due to rotating fan blades. Keep hands and fingers away from fan blades during removal of Fan Module. Use only the designated pull areas to disengage the fan tray. Allow adequate time for fans to spin down prior to removal.**

Check the Fan Module on an annual basis. Inspect the intake and exhaust vents for obstructions and/or debris. If obstructions and/or debris is observed, remove from exterior of system as necessary.

POTENTIAL FAN ALARMS

Check the Fan Module should any one of the following alarms occur:

- Fan Under Speed (`fwuRmtFanUnderSpeedFault`)
- Temperature High (`fwuRmtOverTempFault`)
- DART Temperature High (`fwuRmtDARTOverTempFault`)
- LPA Over Temperature (`fwuRmtLPAHighTempFault`)

REPLACING THE FAN MODULE

⚠ **The rotating fan blades create a hazardous environment. Keep hands and fingers away from the fan blades. Use only the designated pull areas to disengage the Fan Tray. Allow adequate time for fans to spin down prior to removal.**

⚠ **Low voltage electrical shock hazard!**
- **Do not touch bare conductors or other potentially energized parts.**
- **Use appropriate safety equipment approved for use on electrical installations.**
- **Ensure fan module exterior of electrical connector and immediate area are clean and dry prior to disconnection.**
- **Do not perform service during or while conditions of impending rain or snow are observed.**

📝 **You do not need to disconnect the power cabling from the Prism Remote Unit to replace the Fan Module.**

📝 **If the PRU has an Enhanced Fan Shroud, refer to the *FlexWave Prism Remote Unit Enhanced Fan Shroud Installation Guide* for information on how to replace the Fan Module.**

Use the following procedure to remove and replace the PRU Fan Module:

1 Read all instructions and procedures of this section prior to beginning work to replace Fan Module.

2 Order a Prism Remote Unit Fan Replacement Kit, catalog number FWP-RUFAN001.

3 Notify the NOC or alarm monitoring system operator that the Fan Module is being replaced, which will generate fan and power alarms for the affected PRU.

4 Power down the PRU and wait until the fans spin down to a stop.

5 Put on an ESD wrist strap and ensure that it makes maximum contact with bare skin throughout this procedure. ESD grounding straps are available with banana plugs, metal spring clips, or alligator clips. To ensure adequate grounding, the ESD wrist strap should be connected to any bare metal surface of the PRU chassis, or to the Dual-Ground Connector at the bottom of the unit. For further information on the Dual-Ground Connector, see "Ports and Connectors" on page 7.

> **It may be necessary to scrape a small section of the coating off the Prism Remote Unit chassis to ensure connection to a bare metal surface.**

6 Loosen the two screws that secure the Fan Module Cover at the top of the PRU chassis to the front of the enclosure as shown in the graphic to the right.

7 Open the fan cover by rotating it up and back on its hinges.

8 Do the following before you lift the Fan Module out of the PRU chassis:

    a Inspect, clean and dry the top surface surrounding the fan connector.

    b Loosen the two captive screws that secure the Fan Module to the PRU chassis.

    c Disconnect the Fan Module power cable by rotating its coupling nut counter-clockwise until the receptacle can be lifted off its bulkhead plug.

Top of Prism Remote Unit

Two captive screws
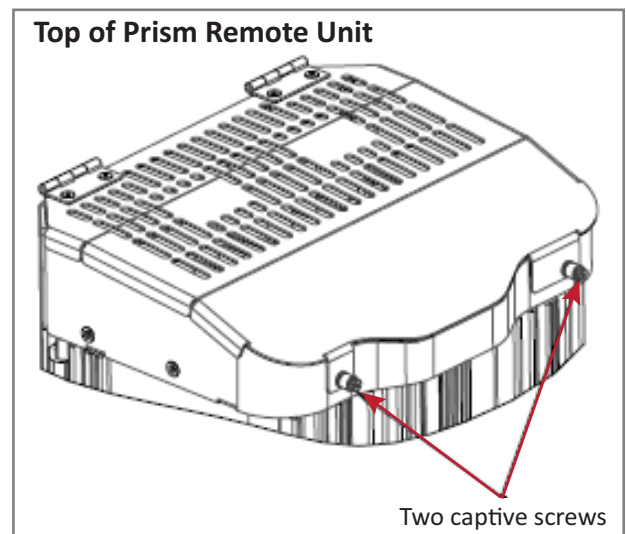
9   Remove the old Fan Module from the PRU:

   a   The Fan Module has two keyhole rivets that extend through their designated slots into the sheet metal frame. To disengage the Fan Module keyhole rivets, slide the Fan Module forward approximately 1/4-inch.

   b   Lift the Fan Module straight up to remove it from the PRU chassis.

Top of Prism Remote Unit

Two captive screws

Power cable
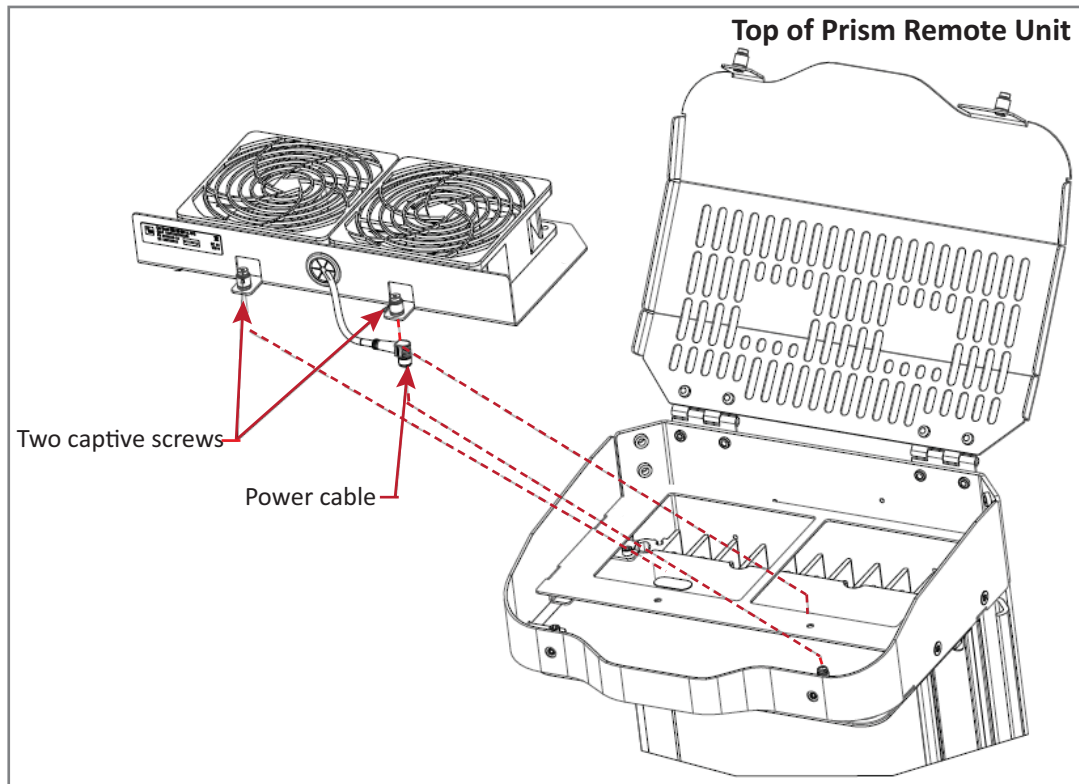
10   Lower the Fan Module into the PRU from the top. Ensure that the two keyhole rivets on the new Fan Module extend through their designated slots in the sheet metal frame, and then slide Fan Module back approximately 1/4-inch to engage its keyhole rivets.

11   Align and then insert the Fan Module's two captive screws with nuts on the PRU; ensure correct thread engagement, and then tighten the Fan Module's captive screws.

12   Insert the Fan Module power cable so that the cable is directed to the left of the connector. Use the key to align the cable correctly. Do not use excessive force to mate the receptacle to the plug.

⚠️   **Failure to align the Fan Module power cable correctly may cause damage to the PRU power connectors, which could result in needing to replace the PRU chassis.**

13   Use your fingers to turn the coupling nut on the power cable approximately 2-1/2 revolutions, and then tighten the coupling nut another 1/4 revolution.

14   Tighten the two captive screws that secure the Fan Module to the chassis; torque the screws to 10 IN-LBS ±1 IN-LB.

15   Close the Fan Module cover and tighten its two captive screws; torque the screws to 10 IN-LBS ±1 IN-LB.

SPECIFICATIONS

The following specifications pertain to the PRU hardware components; for information on RF and optical specifications and the frequency and composite output power at the Antenna port, see the *FlexWave Prism Performance Specifications* that correspond to the FlexWave software release managing this PRU.

Table 26. *Prism Remote Unit Technical Specifications*

Parameter	Specification	Remarks
Enclosure dimensions	See Table 20 on page 35	
Weight	See Table 19 on page 35	
Mounting	Wall, Pole, Inside Pole, and Vault	
Outside Ambient		
Temperature Rating	-40° C to +50° C (-40º F to +122º F)	
Storage Temperature	-40° C to +70° C (-40º F to +158º F)	
Humidity	10% to 90% non-condensing	
Weather Resistance	IP-65	Indoor or outdoor installation
Lightning Protection	20kA IEC 1000-45 8/30 ìs Waveform	Provided by external lightning protector, which is an accessory.
Cooling Fan	Fan, IP-55	
Operating Voltage Range	10 - 28 Vdc	
Connectors		
Network port	RJ-45 female connector	
AC power connector	Sealed 3-pin	Connection point for the AC power cable
Antenna cable connector	50Ω N-Type (female)	50 ohms input/output impedance
Voltage input		
AC-Powered PRUs	100 to 240 Vac, 50 to 60 Hz	Operating range 90 to 265 Vac
DC-Powered PRUs	-40 to -60 Vdc	
Current rating		
AC-Powered PRUs	15 AMPS	
DC-Powered PRUs	45 AMPS	

Table 27. *Notch Filter Specifications*

Frequency Range (MHz)	Maximum Emissions (Sprint requirement) per 30 kHz
817-824	—
< 854	< -76 dBm
854-859	< -76 dBm
859-861.35	< -76 dBm
861.35-861.5	< -56 dBm
861.5-861.6	< -42 dBm
862-869	—
Enclosure Rating	IP67
RF Connectors	N-Type Connector, Female (2)
Ground Studs (w/star washer)	All ground Studs must accept AWG 6 wire
Mounting	Strap mount (Vertical and Horizontal) on up to 12" pole, or Wall mount
Size	15.93" x 8.51" x 4.10"
Weight	18 LBS
Operational Temperature	-25°C to +65°C
Humidity	ETSI 300-019-1-3 10%-100% Condensing
Vibration-operation	ETSI 300-019-1-4
Vibration-transportation	ETSI 300-019-1-2

DCCS GLOBAL TECHNICAL SUPPORT

This chapter tells you how to contact the CommScope Distributed Coverage and Capacity Solutions (DCCS) Technical Support team. Support is available 7 days a week, 24 hours a day.

TELEPHONE HELPLINES

Use the following Helpline telephone numbers to get live support, 24 hours a day:

24x7	+1 888-297-6433 (Toll free for U.S. and Canada)
EMEA 8:00-17:00 (UTC +1)	+ 800 73732837 (Toll free for parts of EMEA and Australia)
	+ 49 909969333 (Toll charge incurred)
	Calls to an EMEA Helpline outside of the 8:00 to 17:00 time frame will be forwarded to the 24x7 Helpline.

ONLINE SUPPORT

To go to the CommScope DCCS Support Request web site from which you can initiate a Technical Support ticket, do one of the following:

- Scan the QR Code to the right.

- If viewing this document online as a PDF, click on the following URL link:

  http://www.commscope.com/wisupport

- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.

WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT RECYCLING

Country specific information about collection and recycling arrangements per the Waste Electrical and Electronic Equipment (WEEE) Directive and implementing regulations is available on CommScope's website.

To access information on the CommScope recycling program, do any of the following:

- Scan the QR Code to the right.

- If viewing this document online as a PDF, click on the following URL link:

  http://www.commscope.com/About-Us/Corporate-Responsibility-and-Sustainability/Environment/Recycling/

- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.

DCCS TECHNICAL TRAINING

1   To access training on the online CommScope DAS and Small Cell Institute, do one of the following:

- Scan the QR Code to the right.

- If viewing this document online as a PDF, click on the following URL link.

  http://www.commscopetraining.com/courses/dassc/

- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.

2   Review the courses listed in separate course panels; for further information on a course, click its **Full details** button. Instructor-led courses are conducted in North America and Europe. Before choosing a course, please verify the region.

3   To view the course schedule and register, click **Course Registration** at the top of the course page; this opens the **Partner Learning Center Login** page.

- If you have an account, enter your **Username** and **Password**, and then click **Login**. (Click on the **Reset Password** link if you do not have your login information.)

- If you don't have an account, click on the **Create New User Account** link under the **Login** button, and follow the prompts.

  Once you have logged in, you will see a list of available class dates.

4   Click the date you prefer and select the **Enroll** or **Register Now** button to enroll. Follow the prompts through the payment process.

5   Click either the **Available Training** or **Calendar** tab to view other training courses.

For training related questions, please contact the CommScope DAS and Small Cell Institute at one of the following emails, as appropriate for your location:

Americas: DASTrainingUS@CommScope.com

EMEA: DASTrainingEMEA@CommScope.com

ACCESSING FLEXWAVE USER DOCUMENTATION

Refer to one of the following sections for information on how to obtain FlexWave Prism or FlexWave Spectrum user documentation:

- ["Accessing Prism User Documentation" on page 125](#)
- ["Accessing Spectrum User Documentation" on page 125](#).

ACCESSING PRISM USER DOCUMENTATION

1 To open the CommScope DCCS Customer Portal, from which you access the FlexWave Prism user documentation, do one of the following.

- Scan the QR Code to the right.
- If viewing this document online as a PDF, click on the following URL link:

    https://www.mycommscope.com

- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.

2 Access to the DCCS Customer Portal requires a user account. On the **Sign In** page, do one of the following:

- If you have an account, enter your **Email** address and **Password**, and then click **Sign In**.
- If you don't have an account, click **New user registration**, and follow the prompts.

3 Click **DCCS**.

4 Select your site, and then click **FlexWave Prism**.

The Prism user documentation is listed under the **Manuals** and **Installation Guides** headings.

5 Click on the title of any document to open it.

ACCESSING SPECTRUM USER DOCUMENTATION

1 To access the FlexWave Spectrum user documentation, do one of the following:

- Scan the QR Code to the right.
- If viewing this document online as a PDF, click on the following URL link.

    http://www.commscope.com/collateral/FlexWave_Spectrum

- Enter the preceding URL into your web browser, and then press **ENTER** on your keyboard.

2 Click on the title of any document to open it.