



Installation Guide

PTP 820
RFU-D-HP
System Release 10.9



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Chapter 1 About This User Guide

This guide describes RFU-E installation procedures and provides additional information concerning system parts and frequency bands.

This guide contains the following chapters:

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Main website:	http://www.cambiumnetworks.com
Sales enquiries:	solutions@cambiumnetworks.com
Support enquiries:	https://support.cambiumnetworks.com
Repair inquiries	https://support.cambiumnetworks.com
Telephone number list:	http://www.cambiumnetworks.com/support/contact-support
Address:	Cambium Networks Limited, Linhay Business Park, Eastern Road, Ashburton, Devon, UK, TQ13 7UP

Purpose

Cambium Networks Point-To-Point (PTP) documents are intended to instruct and assist personnel in the operation, installation and maintenance of the Cambium PTP equipment and ancillary devices. It is recommended that all personnel engaged in such activities be properly trained.

Cambium disclaims all liability whatsoever, implied or express, for any risk of damage, loss or reduction in system performance arising directly or indirectly out of the failure of the customer, or anyone acting on the customer's behalf, to abide by the instructions, system parameters, or recommendations made in this document.

Cross references

References to external publications are shown in italics. Other cross references, emphasized in blue text in electronic versions, are active links to the references. This document is divided into numbered chapters that are divided into sections. Sections are not numbered, but are individually named at the top of each page, and are listed in the table of contents.

Feedback

We appreciate feedback from the users of our documents. This includes feedback on the structure, content, accuracy, or completeness of our documents. Send feedback to support@cambiumnetworks.com.

Problems and warranty

Reporting problems

If any problems are encountered when installing or operating this equipment, follow this procedure to investigate and report:

- 1 Search this document and the software release notes of supported releases.
- 2 Visit the support website.
- 3 Ask for assistance from the Cambium product supplier.
- 4 Gather information from affected units, such as any available diagnostic downloads.
- 5 Escalate the problem by emailing or telephoning support.

Repair and service

If unit failure is suspected, obtain details of the Return Material Authorization (RMA) process from the support website.

Hardware warranty

Cambium's standard hardware warranty is for one (1) year from date of shipment from Cambium Networks or a Cambium distributor. Cambium Networks warrants that hardware will conform to the relevant published specifications and will be free from material defects in material and workmanship under normal use and service. Cambium shall within this time, at its own option, either repair or replace the defective product within thirty (30) days of receipt of the defective product. Repaired or replaced product will be subject to the original warranty period but not less than thirty (30) days.

To register PTP products or activate warranties, visit the support website. For warranty assistance, contact the reseller or distributor.



Caution

Using non-Cambium parts for repair could damage the equipment or void warranty. Contact Cambium for service and repair instructions.

Portions of Cambium equipment may be damaged from exposure to electrostatic discharge. Use precautions to prevent damage.

Security advice

Cambium Networks systems and equipment provide security parameters that can be configured by the operator based on their particular operating environment. Cambium recommends setting and using these parameters following industry recognized security practices. Security aspects to be considered are protecting the confidentiality, integrity, and availability of information and assets. Assets include the ability to communicate, information about the nature of the communications, and information about the parties involved.

In certain instances Cambium makes specific recommendations regarding security practices, however the implementation of these recommendations and final responsibility for the security of the system lies with the operator of the system.

Warnings, cautions, and notes

The following describes how warnings and cautions are used in this document and in all documents of the Cambium Networks document set.

Warnings

Warnings precede instructions that contain potentially hazardous situations. Warnings are used to alert the reader to possible hazards that could cause loss of life or physical injury. A warning has the following format:



Warning

Warning text and consequence for not following the instructions in the warning.

Cautions

Cautions precede instructions and are used when there is a possibility of damage to systems, software, or individual items of equipment within a system. However, this damage presents no danger to personnel. A caution has the following format:



Caution

Caution text and consequence for not following the instructions in the caution.

Notes

A note means that there is a possibility of an undesirable situation or provides additional information to help the reader understand a topic or concept. A note has the following format:



Note

Note text.

Caring for the environment

The following information describes national or regional requirements for the disposal of Cambium Networks supplied equipment and for the approved disposal of surplus packaging.

In EU countries

The following information is provided to enable regulatory compliance with the European Union (EU) directives identified and any amendments made to these directives when using Cambium equipment in EU countries.



Disposal of Cambium equipment

European Union (EU) Directive 2002/96/EC Waste Electrical and Electronic Equipment (WEEE)

Do not dispose of Cambium equipment in landfill sites. For disposal instructions, refer to <http://www.cambiumnetworks.com/support>

Disposal of surplus packaging

Do not dispose of surplus packaging in landfill sites. In the EU, it is the individual recipient's responsibility to ensure that packaging materials are collected and recycled according to the requirements of EU environmental law.

In non-EU countries

In non-EU countries, dispose of Cambium equipment and all surplus packaging in accordance with national and regional regulations.

Chapter 2 RFU-D-HP Overview

RFU-D-HP is a MultiCore RFU that provides high power for long-haul applications. Like RFU-D, RFU-D-HP incorporates two modems, which are connected to the IDU via a single baseband interface.

RFU-D-HP offers a flexible and modular branching system that enables the combination of different bands for different carriers. For example, the same link can be used for both L6 and U6 or 7 and 8 GHz channels.

RFU-D-HP can be used with wide diplexer-based branching, enabling direct mount installation. Diplexers can be used for direct mount configurations of up to 4+0.

RFU-D-HP can also be used with channel filter-based branching, enabling configurations of up to 8+0 per polarization in remote mount and all-indoor configurations.

To maximize operational flexibility, both diplexers and channel filters are provided separately for the radio units, enabling the diplexers or filters to be changed in the field with minimal downtime and no risk of impairing the RFU's sealing.

To maximize operational flexibility, both diplexer covers and outdoor circulator units (OCUs) are provided separately from the radio units, enabling the diplexer covers or OCUs to be changed in the field with minimal downtime and no risk of impairing the RFU's sealing.

For all-indoor configurations, the IDU, the RFUs, and the channel filter-based branching system are ordered as a single item and delivered, pre-assembled, pre-tested, and pre-configured in a rack.



Note

Since all-indoor configurations are pre-assembled and pre-configured, they are not covered in this Installation Guide.

RFU-D-HP Interfaces

The following figures show the RFU-D-HP TX and RX interfaces.

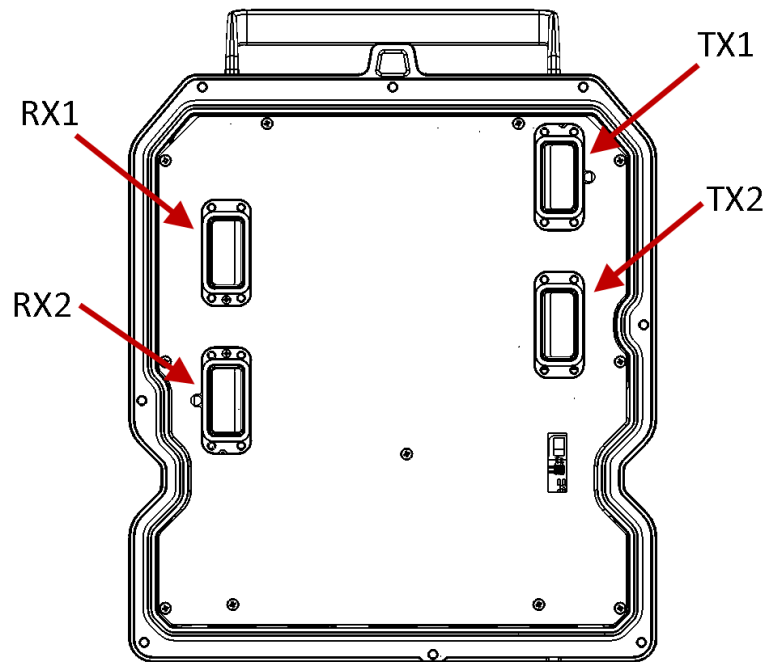


Figure 1: RFU-D-HP Radio Interfaces

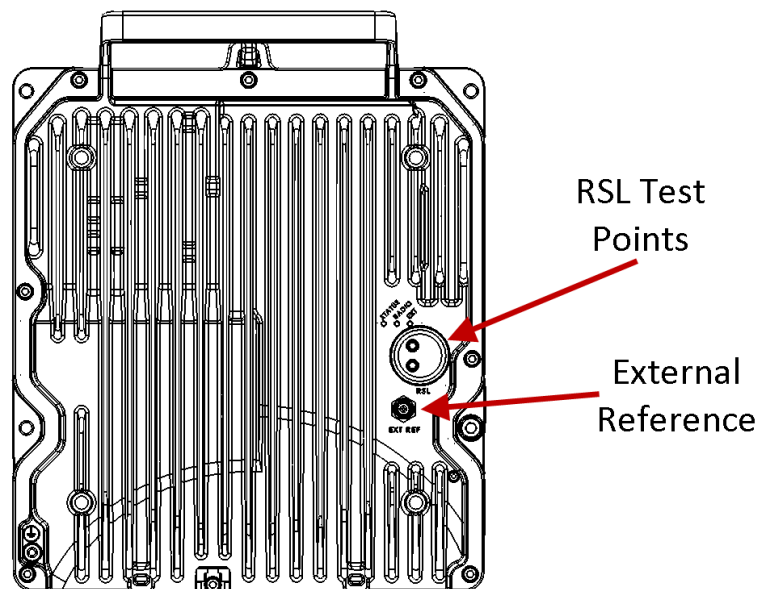


Figure 2: RFU-D-HP Front Side Interfaces

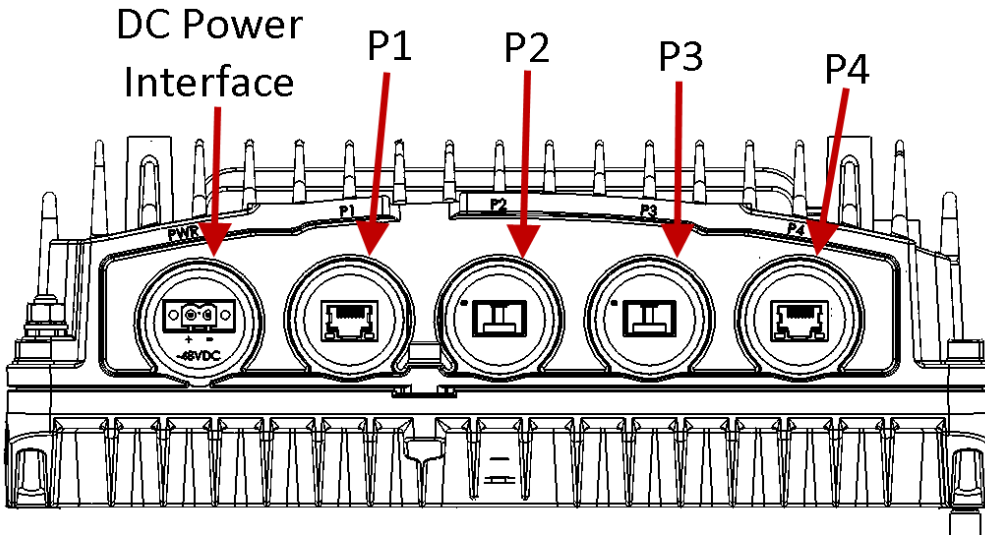


Figure 3: RFU-D-HP Data and Power Interfaces

- PWR: DC power interface (-48VDC)
- P1: RFU Interface (RJ-45)
- P2: RFU Interface (SFP)
- P3: Data Sharing
- P4: Reserved for future use.



Note

Note that in RFU-D-HP, Port 1 is the upper port, located closest to the handle, and Port 2 is the lower port, located closest to the Ethernet ports.

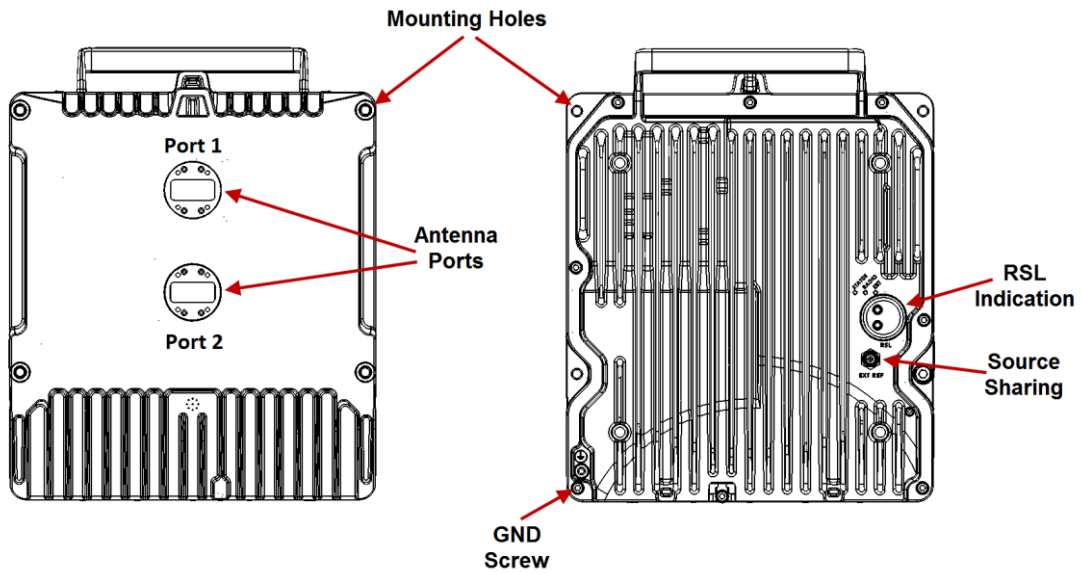


Figure 4: RFU-D-HP Rear View (Left) and Front View (Right)

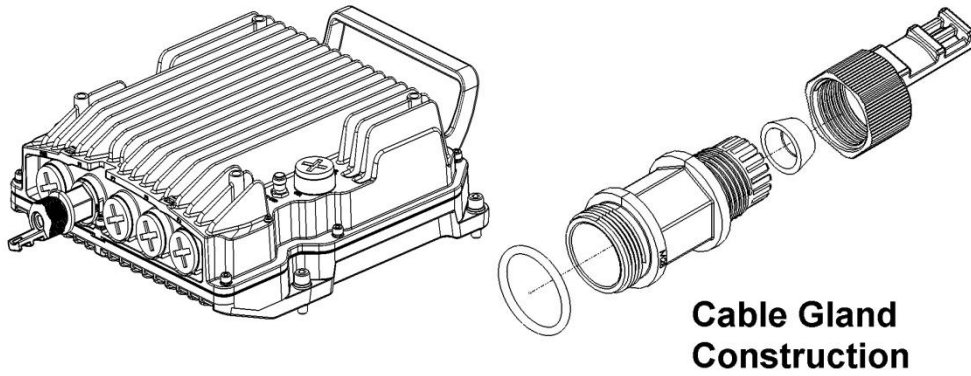


Figure 5: Cable Gland Construction



Note

The voltage at the RSL port is 1.XX where XX is the RSL level. For example: 1.59V means an RSL of -59 dBm. Note that the voltage measured at the RSL port is not accurate and should be used only as an aid).

For instructions on determining which radio carrier is measured, refer to the User Guide for the IDU and Release version you are using.

System Components – Diplexer-Based Branching



Note!

Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.

Presenting a specific component in this manual does not indicate that it is available for ordering. Please consult with your pre-sales engineer for specific component availability information.

Diplexer-Based Branching – Radio Components

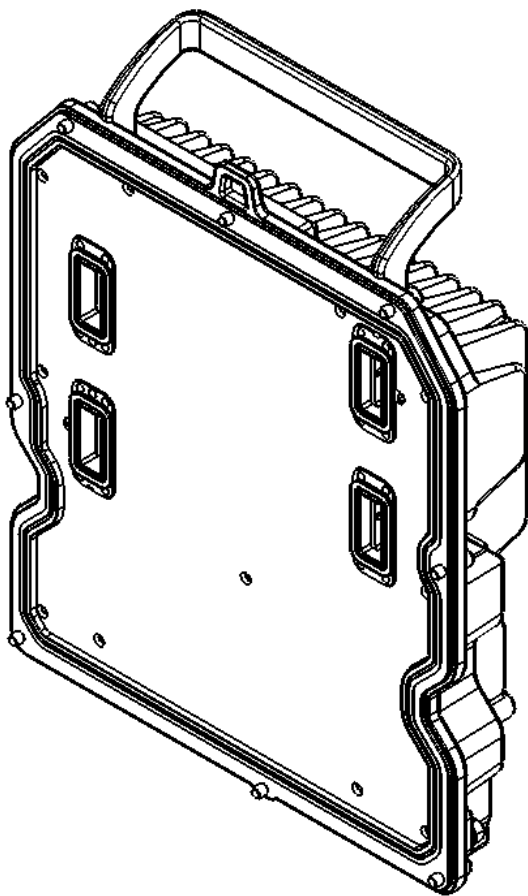


Figure 6: RFU-D-HP Radio Unit

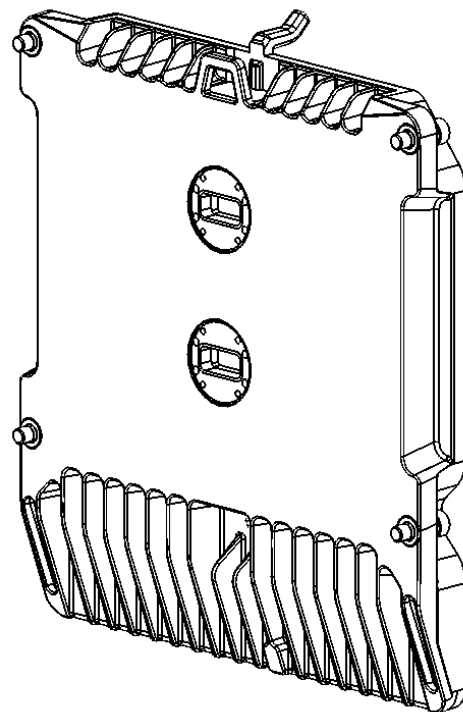


Figure 7: RFU-D-HP Diplexer Unit

Diplexer-Based Branching – Branching Components

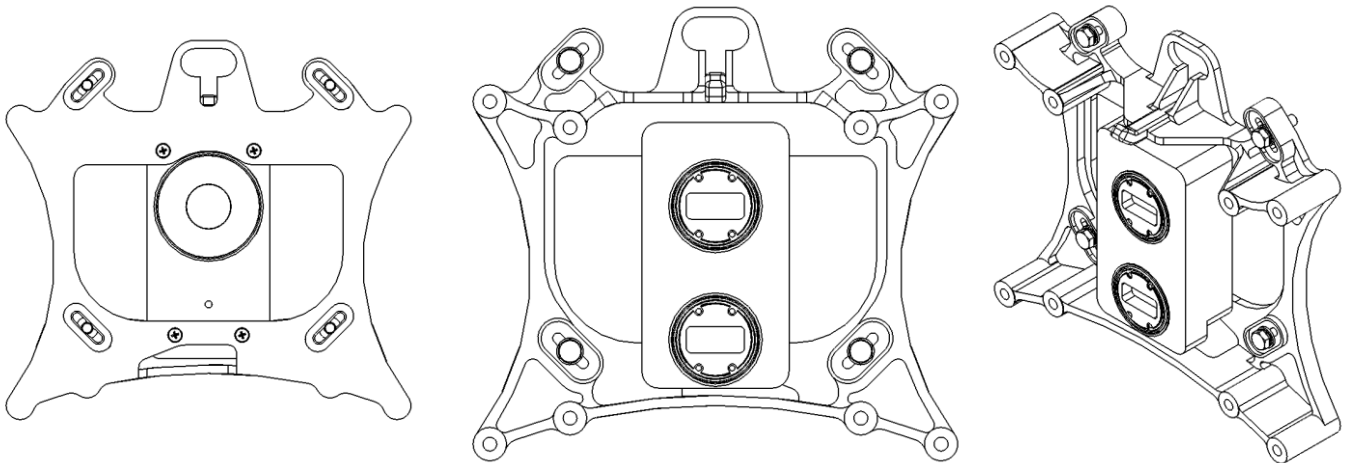


Figure 8: OMT

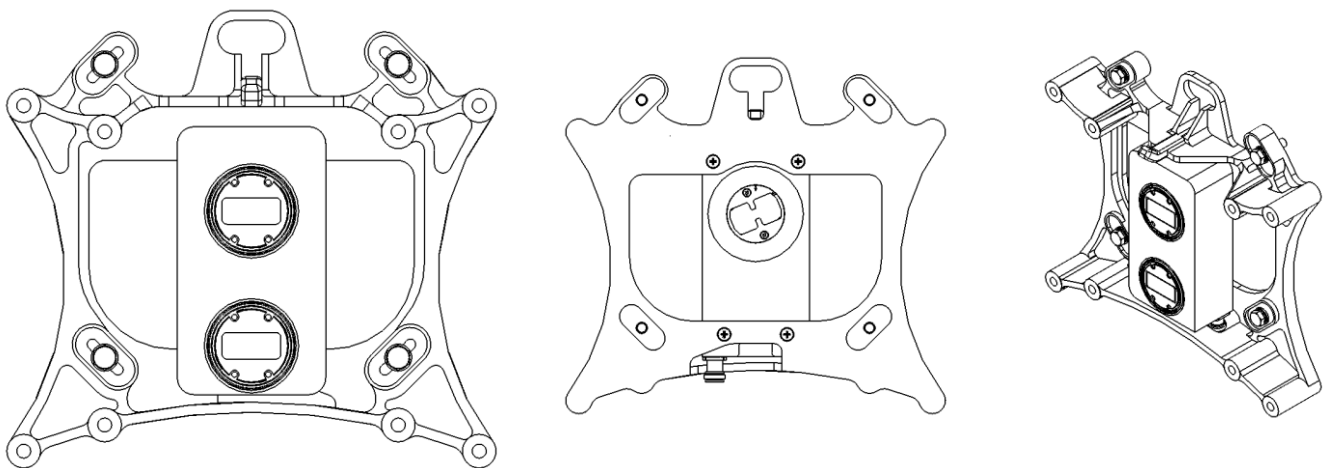


Figure 9: Space Diversity Branching Device

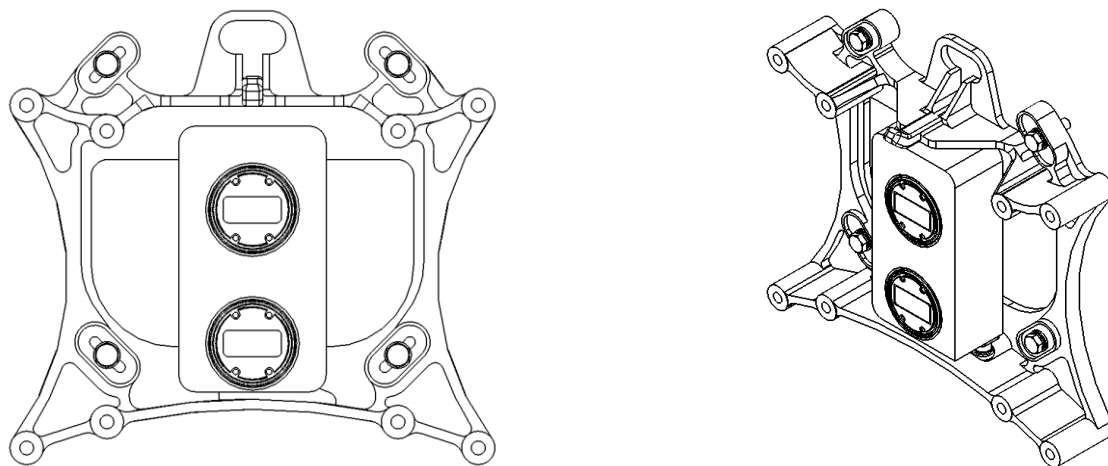


Figure 10: Splitter

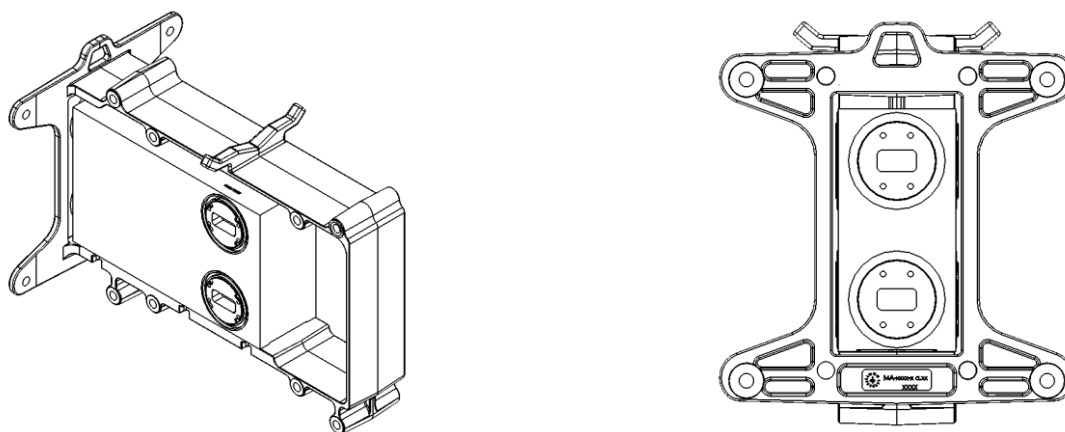


Figure 11: Dual Coupler/Splitter/Circulator

Diplexer-Based Branching – Accessory Components

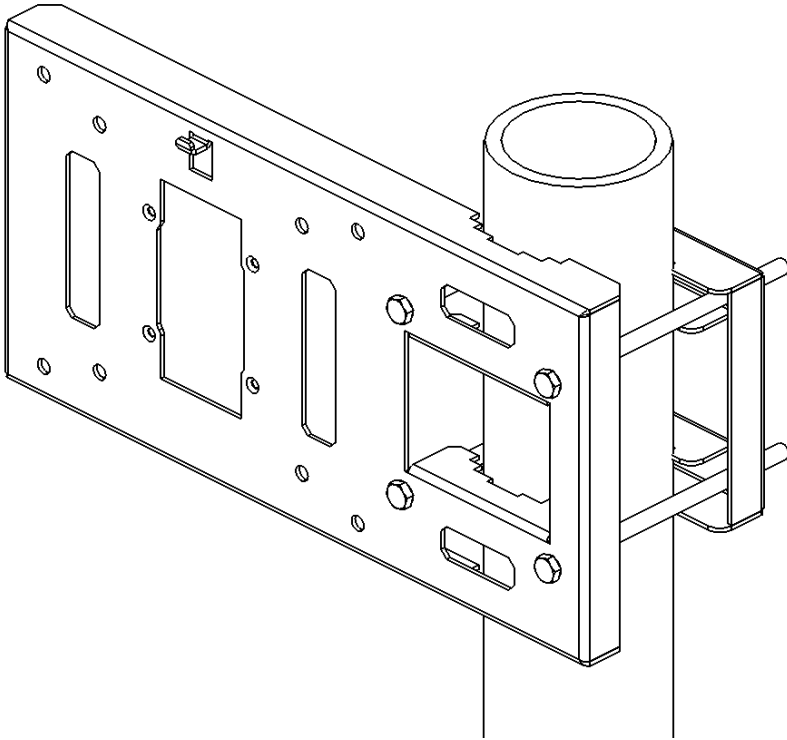


Figure 12: Remote Pole Mount

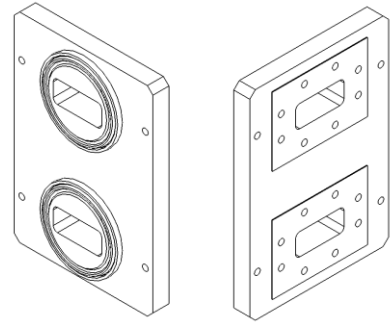


Figure 13: Remote Pole Mount Adaptor

System Components – Channel Filter-Based Branching



Note!

Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.

Presenting a specific component in this manual does not indicate that it is available for ordering. Please consult with your pre-sales engineer for specific component availability information.

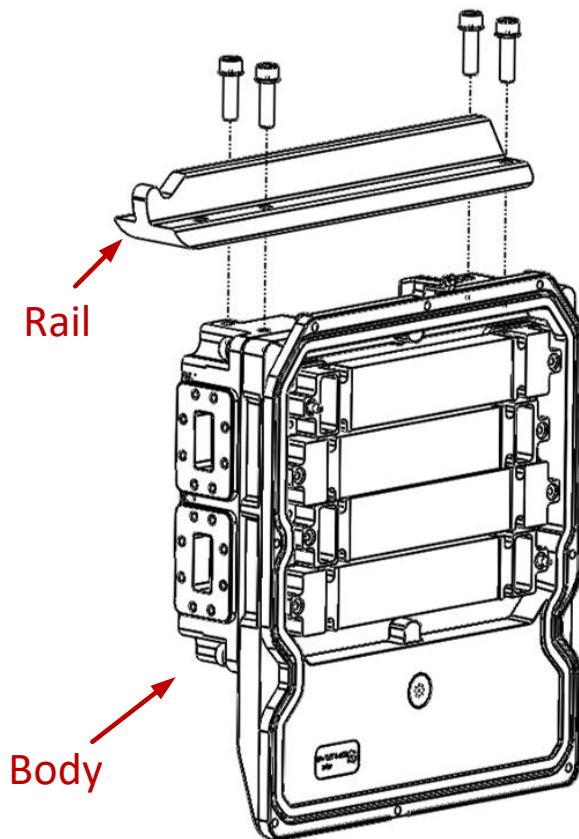


Figure 14: RFU-D-HP OCU Unit

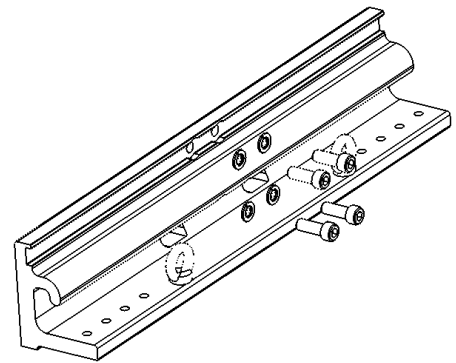


Figure 15: RFU-D-HP Branching Pole Profile (Part of RFU-D-HP Filters Remote Mount Kit)

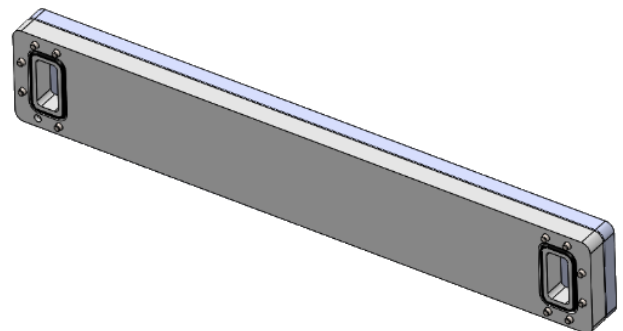
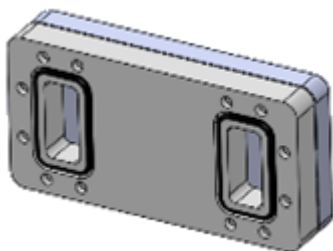


Figure 16: Short U-Bend

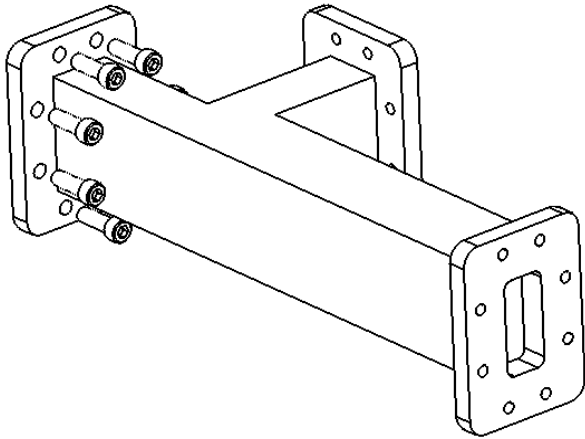


Figure 17: Long U-Bend

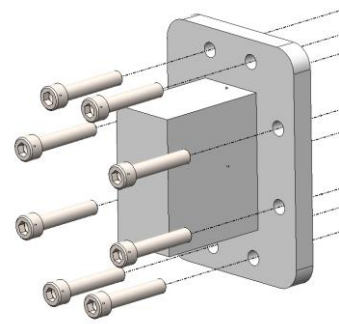


Figure 18: Splitter/Coupler

Figure 19: Termination

RFU-D-HP Models and Marketing Models



Note!

Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.

Presenting a specific component in this manual does not indicate that it is available for ordering. Please consult with your pre-sales engineer for specific component availability information.

Radio Unit

The following table lists and describes the available RFU-D-HP models for the radio unit, which is sub-band generic.

Table 1: RFU-D-HP– Radio Unit

P/N	Description
C060082R239A	PTP 820 RFU-D-HP, Dual TX, 6 GHz, Split, Basic Radio
C070082R325A	PTP 820 RFU-D-HP, Dual TX, 7 GHz, Split, Basic Radio
C080082R175A	PTP 820 RFU-D-HP, Dual TX, 8 GHz, Split, Basic Radio
C110082R149A	PTP 820 RFU-D-HP, Dual TX, 11 GHz, Split, Basic Radio

Diplexer Unit

P/N	Description
N060082L218A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH1W4, Hi,6179.415-6304.015MHz
N060082L219A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH1W4, Lo,5927.375-6051.975MHz
N060082L229A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH3W6, Hi,6238.715-6363.315MHz
N060082L230A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH3W6, Lo,5986.675-6111.275MHz
N060082L220A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH5W8, Hi,6298.015-6422.615MHz
N060082L221A	PTP 820C-HP/RFU-D-HP, Diplexer,L6 GHz, TR 252A, CH5W8, Lo,6045.975-6170.575MHz
N060082L238A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR160A,Ch1W6,Hi,6707.5-6772.5MHz
N060082L239A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR160A,Ch1W6,Lo,6537.5-6612.5MHz
N060082L240A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz,TR160A,Ch7W12,Hi,6767.5-6832.5MHz
N060082L241A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz,TR160A,Ch7W12,Lo,6607.5-6672.5MHz
N060082L242A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz,TR160A,Ch13W16,Hi,6827.5-6872.5MHz
N060082L243A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz,TR160A,Ch13W16,Lo,6667.5-6712.5MHz
N060082L222A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340A, CH1W4, Hi,6781-6939MHz
N060082L223A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340A, CH1W4, Lo,6441-6599MHz
N060082L224A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340A, CH5W8, Hi,6941-7099MHz
N060082L225A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340A, CH5W8, Lo,6601-6759MHz
N060082L245A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340D, CH7W11, Hi,6965-7115MHz

N060082L246A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 340D, CH7W11, Lo,6625-6775MHz
N060082L281A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 150A, CH2W4, Hi,7050-7125MHz
N060082L282A	PTP 820C-HP/RFU-D-HP, Diplexer,U6 GHz, TR 150A, CH2W4, Lo,6900-6975MHz
N110082L127A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH1W6, Hi,11185-11485MHz
N110082L128A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH1W6, Lo,10695-10955MHz
N110082L129A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH2W7, Hi,11225-11485MHz
N110082L130A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH2W7, Lo,10735-10995MHz
N110082L131A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH3W8, Hi,11265-11525MHz
N110082L132A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH3W8, Lo,10775-11035MHz
N110082L133A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH4W9, Hi,11305-11585MHz
N110082L134A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH4W9, Lo,10815-11095MHz
N110082L135A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH5W10, Hi,11345-11605MHz
N110082L136A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH5W10, Lo,10855-11115MHz
N110082L137A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH6W12, Hi,11385-11705MHz
N110082L138A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH6W12, Lo,10895-11205MHz
N110082L139A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH7W13, Hi,11425-11725MHz
N110082L140A	PTP 820C-HP/RFU-D-HP, Diplexer,11 GHz, TR 500, CH7W13, Lo,10915-11207MHz
N070082L326A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH1W2, Hi,7580.5-7639.5MHz
N070082L327A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH1W2, Lo,7426.5-7485.5MHz
N070082L328A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH2W3, Hi,7608.5-7667.5MHz
N070082L329A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH2W3, Lo,7454.5-7513.5MHz
N070082L330A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH3W4, Hi,7636.5-7695.5MHz
N070082L331A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH3W4, Lo,7482.5-7541.5MHz
N070082L332A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH4W5, Hi,7664.5-7723.5MHz
N070082L333A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 154A, CH4W5, Lo,7510.5-7569.5MHz
N070082L334A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 161A, CH1W2, Hi,7284-7343MHz
N070082L335A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 161A, CH1W2, Lo,7123-7182MHz
N070082L336A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 161A, CH3W4, Hi,7340-7399MHz
N070082L337A	PTP 820C-HP/RFU-D-HP, Diplexer,7 GHz, TR 161A, CH3W4, Lo,7179-7238MHz
N080082L176A	PTP 820C-HP/RFU-D-HP, Diplexer,8 GHz, TR 311A, CH1W4, Hi,8043.52-8163.47MHz
N080082L177A	PTP 820C-HP/RFU-D-HP, Diplexer,8 GHz, TR 311A, CH1W4, Lo,7732.2-7852.15MHz
N080082L178A	PTP 820C-HP/RFU-D-HP, Diplexer,8 GHz, TR 311A, CH5W8, Hi,8162.12-8282.07MHz
N080082L179A	PTP 820C-HP/RFU-D-HP, Diplexer,8 GHz, TR 311A, CH5W8, Lo,7850.8-7970.75MHz

Mediation Devices in Diplexer-Based Branching

P/N	Description
N000082L166A	PTP 820C-HP/RFU-D-HP Remote Mount kit
N060082L231A	PTP 820C-HP/RFU-D-HP Remote Mount Adaptor,6 GHz
N110082L144A	PTP 820C-HP/RFU-D-HP Remote Mount Adaptor,11 GHz
N070082L338A	PTP 820C-HP/RFU-D-HP Remote Mount Adaptor,7-8 GHz
N060082L232A	PTP 820C-HP/RFU-D-HP Splitter,6 GHz
N110082L145A	PTP 820C-HP/RFU-D-HP Splitter,11 GHz

N070082L339A	PTP 820C-HP/RFU-D-HP Splitter,7-8 GHz
N060082L226A	PTP 820C-HP/RFU-D-HP OMT,6 GHz
N070082L340A	PTP 820C-HP/RFU-D-HP OMT,7-8 GHz
N110082L141A	PTP 820C-HP/RFU-D-HP OMT,11 GHz
N060082L244A	PTP 820C-HP/RFU-D-HP OMT Plate Adaptor, 6 GHz
N110082L148A	PTP 820C-HP/RFU-D-HP OMT Plate Adaptor, 11 GHz
N070082L341A	PTP 820C-HP/RFU-D-HP OMT Plate Adaptor, 7-8 GHz
N060082L227A	PTP 820C-HP/RFU-D-HP Dual Coupler,6 GHz
N110082L142A	PTP 820C-HP/RFU-D-HP Dual Coupler,11 GHz
N070082L342A	PTP 820C-HP/RFU-D-HP Dual Coupler,7-8 GHz
N060082L228A	PTP 820C-HP/RFU-D-HP Dual Splitter,6 GHz
N110082L143A	PTP 820C-HP/RFU-D-HP Dual Splitter,11 GHz
N070082L343A	PTP 820C-HP/RFU-D-HP Dual Splitter,7-8 GHz
N060082L233A	PTP 820C-HP/RFU-D-HP Dual Circulator,6 GHz
N110082L146A	PTP 820C-HP/RFU-D-HP Dual Circulator,11 GHz
N070082L344A	PTP 820C-HP/RFU-D-HP Dual Circulator,7-8 GHz
N060082L234A	PTP 820C-HP/RFU-D-HP Space Diversity Kit,6 GHz
N110082L147A	PTP 820C-HP/RFU-D-HP Space Diversity Kit,11 GHz
N070082L345A	PTP 820C-HP/RFU-D-HP Space Diversity Kit,7-8 GHz

Table 2: Antenna Circ. Adapters for OMT



Note:

This adapter is not required if the antenna is equipped with a circular feeder. Such antenna will have the following marketing model structure: Am-size(ft)-freq-CIRC-mnf.

Antenna Circ. Adapters for OMT	6GHz	7-8GHz	10-11GHz
CommScope	N060082L147A	N070082L303A	N110082L092A
Radio Waves	N060082L154A	N070082L310A	N110082L103A

Antenna Connection

RFU-D-HP can be mounted directly for 6 to 11 GHz using the following antenna types (for integrated antennas, specific antennas are required):

- CommScope: VHLP series
- Radiowave: HP Series

For remote mount installations, the following Flexible Waveguide flanges should be used (millimetric). The same antenna type (integrated) as indicated above can be used (recommended).

Other antenna types using the flanges listed in the table below may also be used.

Table 3: Antenna Flanges

Frequency Band	Range (GHz)	Rect. WG Flange Des.	Radio Side (Remote) Flange Des.
6(L/U) GHz	5.8-7.1	WR137	UDR70 ¹
7/8 GHz	7.1-8.5	WR112	UBR84 ¹
10/11 GHz	10.0-11.7	WR90	UBR100 ¹

If a different antenna type (CPR flange) is used, a flange adaptor is required. Please contact your Cambium Networks representative for details.



Note!

Appropriate lubricant or grease can be applied to the screws that connect the RFU-D-HP to the antenna interface.

¹ There is no direct WG connection. An adaptor is required to connect the RFU to the WG.

Power Specifications

Electrical Requirements

- Maximum Power Consumption: 130W

Important Notes!

- The unit must only be installed by service personnel.
- The unit must have a permanent connection to protective grounding.
- When using an external power source, the disconnect device (circuit breaker):
 - Shall be readily accessible and incorporated external to the equipment.
 - The maximum rating of the overcurrent protection shall be up to 6 Amp.

Environmental Specifications

Operating: ETSI EN 300 019-1-4 Class 4.1

Temperature range for continuous operating temperature with high reliability:

-33°C (-27°F) to +55°C (131°F)

Temperature range for exceptional temperatures; tested successfully, with limited margins:

-45°C (-49°F) to +60°C (140°F)

Humidity: 5%RH to 100%RH

IEC529 IP66

Storage: ETSI EN 300 019-1-1 Class 1.2

Transportation: ETSI EN 300 019-1-2 Class 2.3

Chapter 3 Grounding the RFU-D-HP

List of Items

Table 4: Grounding Cable

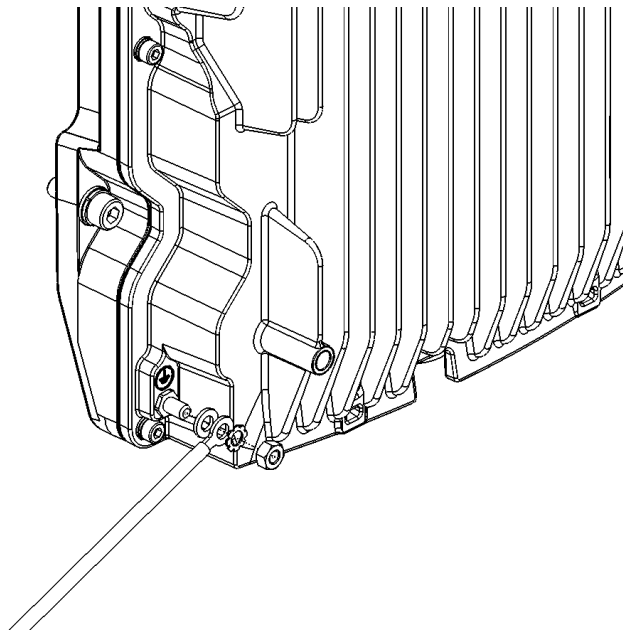
P/N	Description	Quantity
N000082L116A	PTP 820 GROUND CABLE FOR IDU and ODU	1

Required Tools

- Metric offset wrench key wrench #3
- Metric wrench 10mm

Procedure

- 1 On the front of each RFU-D-HP unit, loosen the nut, plain washer, and serrated washer from the GND stud, using the metric offset hexagon key and the wrench.



- 2 Place the cable lug (supplied with the RFU-D-HP grounding kit) in place on the screw.
- 3 Secure the cable lug.
- 4 The second side of the GND cable should be connected to the main ground bar or terminal ground bar of the site.
- 5 Perform a resistance test between the 2 lugs of the GND cable. Verify that the result is 0-2 ohms.



Note!

The unit's earthing screw terminal shall be permanently connected to protective earth in a building installation in accordance with applicable national code and regulations by a service person.

Any outdoor antenna cable shield shall be permanently connected to protective earth in a building installation.

Chapter 4 Connecting the Data and Power Cables

RFU-D-HP is connected to the IDU via a standard CAT-5e or preferably CAT-6/6a cable, with RJ-45 connectors on the RFU and an RJ-45 connector on the IDU. They can also be connected to the IDU over optical fiber cables via the optical (SFP) RFU connections on the IDU.



Note!

For a description of the data and power interfaces, see Figure 3.

An external DC power cable is required to supply power to the RFU. The DC power cable is connected to the DC power interface (PWR).

CAT-5e/CAT-6 cables are connected to P1.

Optical fiber cables are connected to P2.

Table 5: Maximum Cable Length

Interface	Cable Type	Maximum Length
Optical	Fiber	300m
Electrical	CAT-5e (24 AWG)	150m
	CAT-6a (22 AWG)	150m
DC Power	DC (14 AWG)	100m
	DC (10 AWG)	101m-300m

Grounding the Cables

To fit the gland, the outer cable diameter should be between 6-10 mm.

Cables must be grounded as follows.

- For fiber cables (see *Connecting an Optical Fiber Cable and SFP* on page 48), no grounding is required.
- For DC power cables (see *Connecting a DC Power Cable* on page 53), no grounding is required.
- For CAT-5e/CAT-6 cables (see *Connecting a CAT-5e/CAT-6 Data Cable* on page 55), the shielded Ethernet cable (SF/UTP construction) **must** be grounded to the antenna tower at the top (next to the RFU), the entry to the indoor cabinet, and every 50m using the kit CAT6a_gnd_kit.

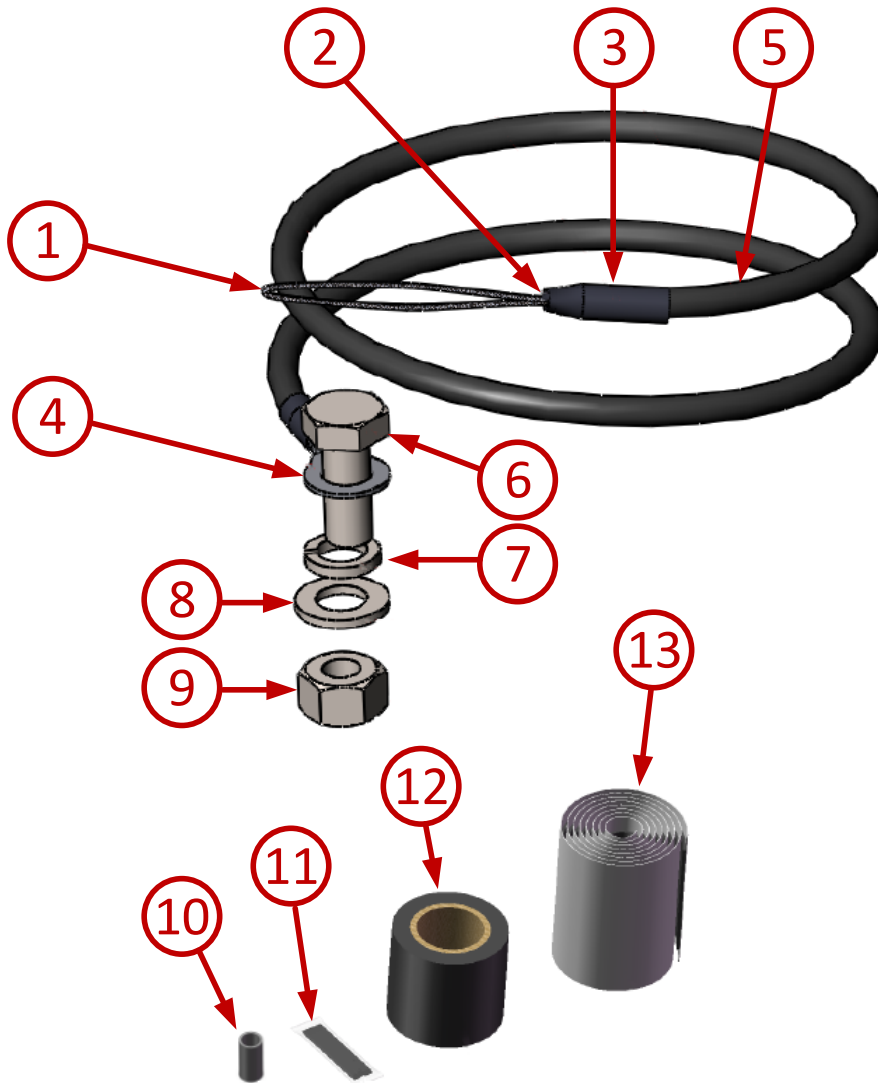


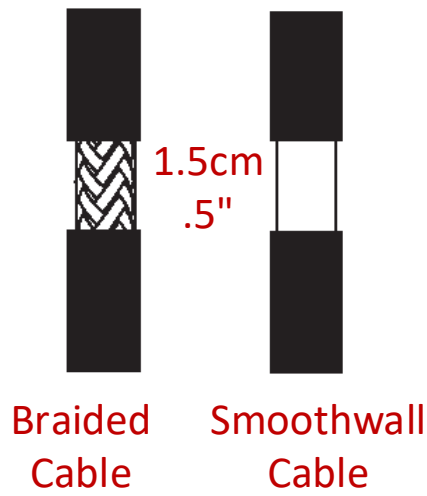
Figure 20: Cable Grounding

Table 6: Cable Grounding Kit

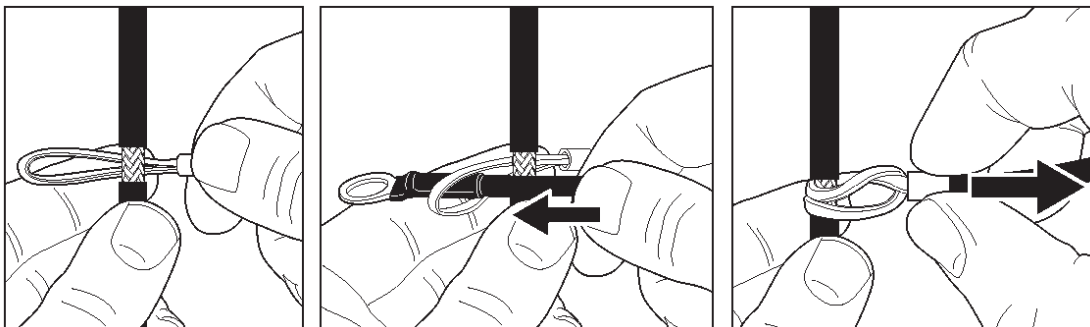
Marketing Model	Description
N000082L173A	PTP 820 High Speed GND Kit for CAT6A Cable

To connect the grounding kit:

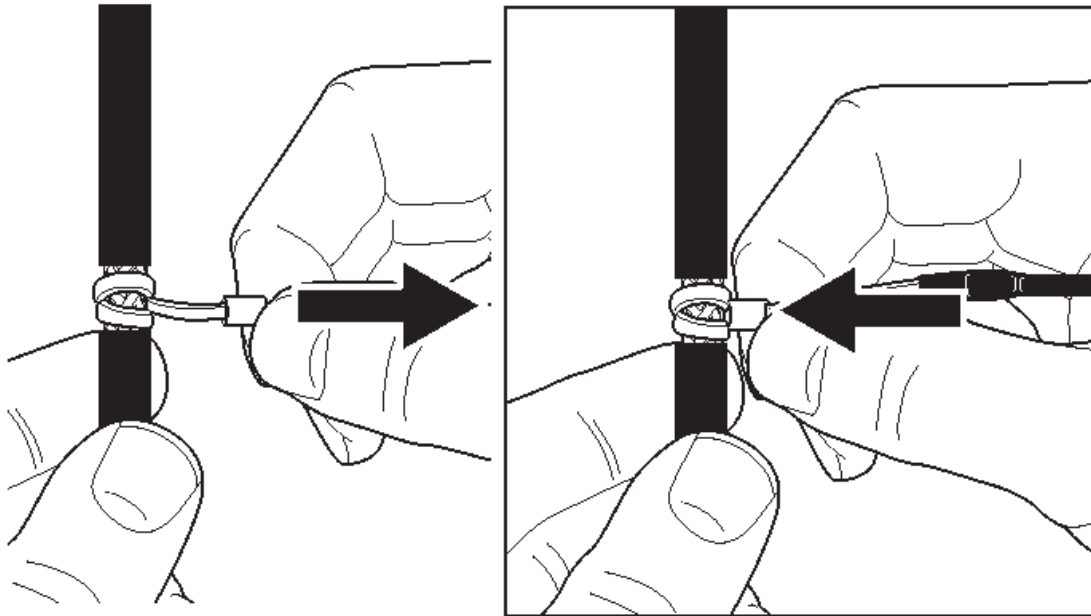
- 1 Strip the cable jacket about 1.5 cm (.5").



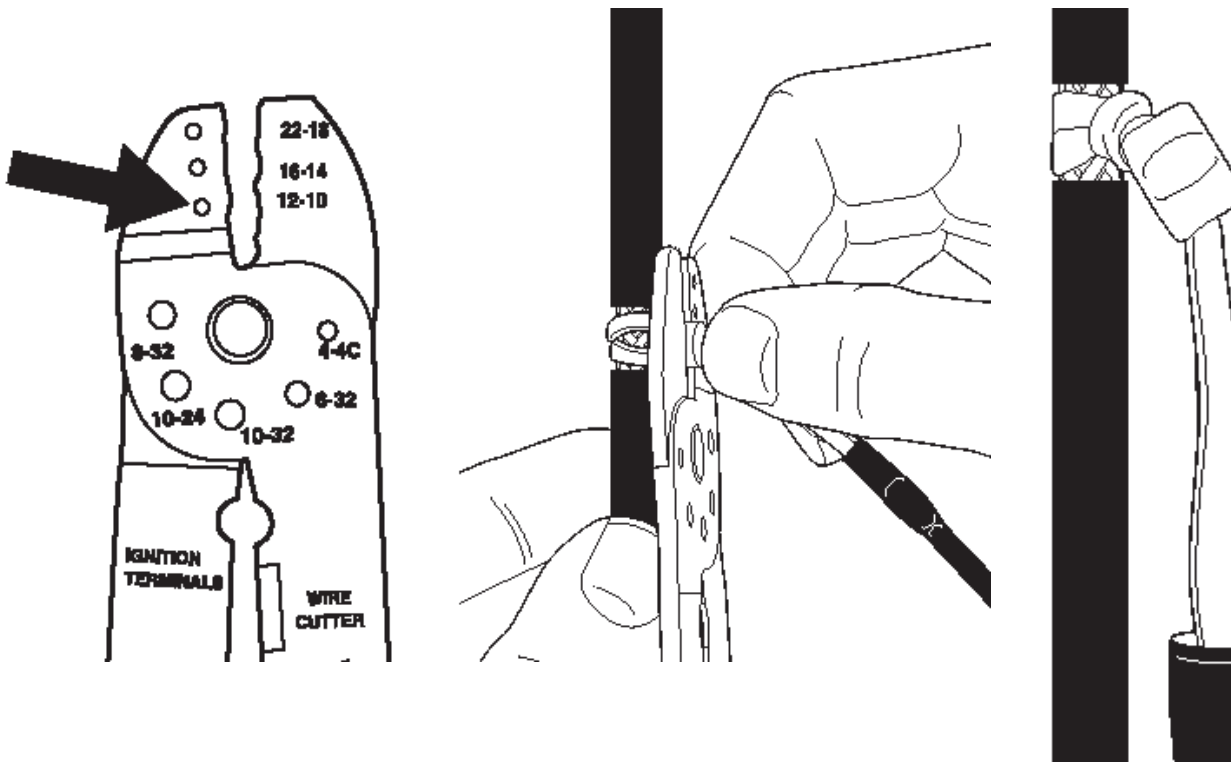
- 2 Loop the grounding wire's braid belt (1) around the stripped portion of the cable, insert the rest of the grounding wire (5) through the braid belt, and tighten to form a knot, as shown in the figure below.



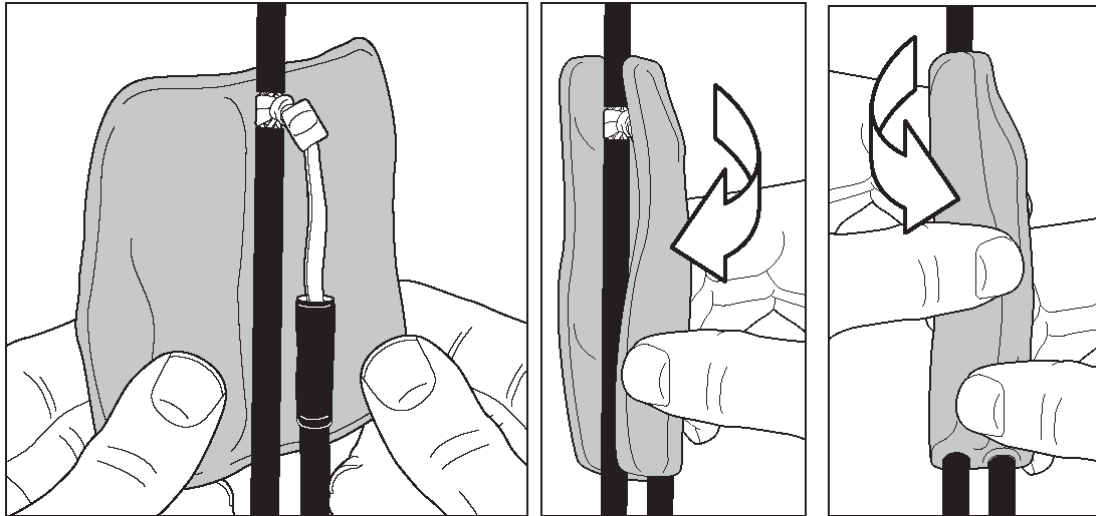
- 3 Grasp the terminal of the braid belt (2) and slide it flush with the knot around the cable, as shown in the figure below.



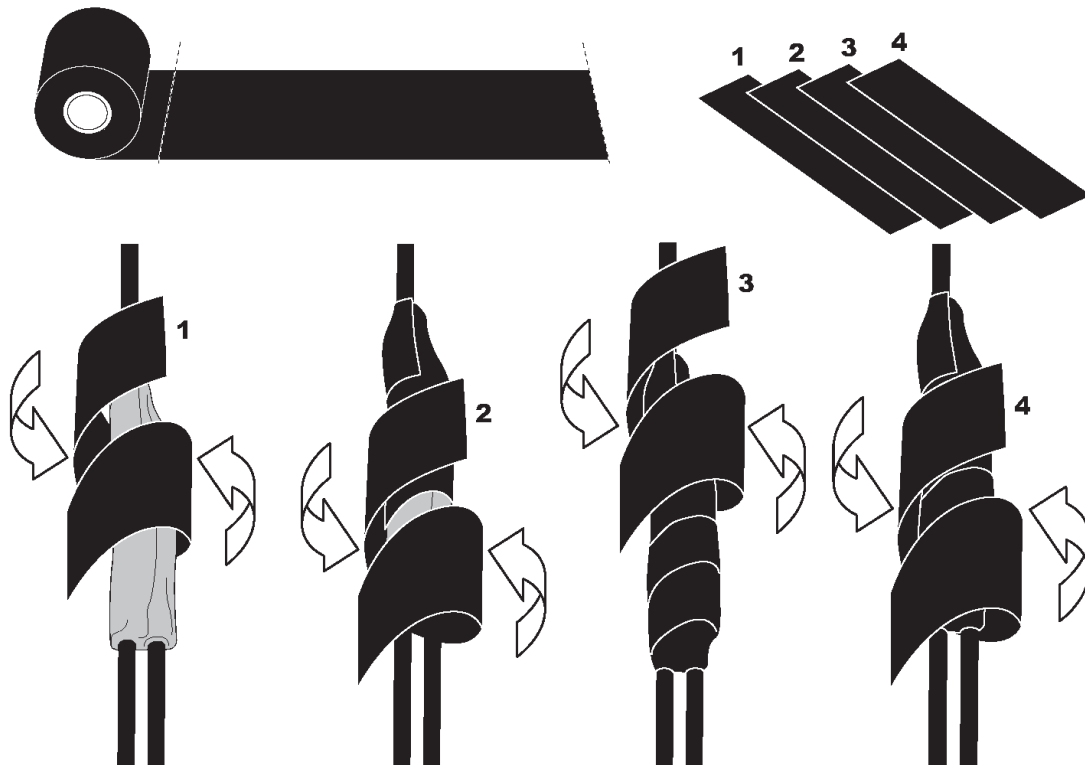
- 4 Crimp the knotted braid belt (1) and the bare terminal (10) together, as shown in the figures below.



- 5 Wrap the butyl rubber sealing clay (13) around the cable and the grounding wire, as shown in the figures below.

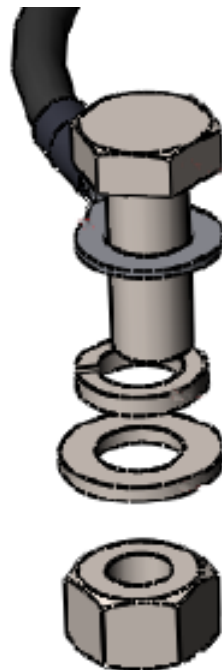


- 6 Cut four strips of the tape (12), approximately 20 cm (8") each, and wrap these strips of tape around the butyl rubber sealing clay (13), as shown in the figures below.





- 7 Pass the hex bolt (6) through the copper lug at the end of the grounding wire (4), and secure it to the grounding bar using the flat washer (7), the spring washer (8), and the nut (9). Use conductive grease (11) on the bolt and nut to ensure proper contact.



Power Source

When selecting a power source, the following must be considered:

DC power can be from -40.5 to -59 VDC.

Recommended: Availability of a UPS (Uninterrupted Power Source), battery backup, and emergency power generator.

The power supply must have grounding points on the AC and DC sides.



Caution!

The user power supply GND must be connected to the positive pole in the RFU-D-HP power supply. Any other connection may cause damage to the system!



Note!

For the warranty to be honored, you must install the RFU-D-HP in accordance with the instructions above.

Surge Protection

RFU-D-HP includes built-in surge protection for its power and RJ-45 data ports (PWR, P1, P4). RFU-D-HP's surge protection implementation for this port complies with EN61000-4-5, Class 4 , provided the cable was prepared according to the instructions in *Connecting a CAT-5e/CAT-6 Data Cable* on page 55.

In areas in which severe lighting conditions are likely to occur, it is strongly recommended to add additional protection by placing lightning protectors on the CAT-5e or CAT-6 cable, near the connection point with the RFU-D-HP unit.

Available Cable Options

Fiber Optic Cables - Single Mode

Table 7: Fiber Optic Cables - Single Mode

P/N	Description
N000082L176A	PTP 820 Optical CABLE,SM, 5m
N000082L139A	PTP 820 Optical CABLE,SM, 30m
N000082L140A	PTP 820 Optical CABLE,SM, 50m
N000082L141A	PTP 820 Optical CABLE,SM, 80m
N000082L142A	PTP 820 Optical CABLE,SM, 100m
N000082L143A	PTP 820 Optical CABLE,SM, 150m

DC Cable

Table 8: DC Cable and Connector

P/N	Description
N000082L170A	PTP 820 Outdoor_DC_cbl_2x10AWG_drum, 305m
N000082L018A	PTP 820 Outdoor_DC_cbl_2x12AWG_drum, 305m
N000082L169A	PTP 820 Outdoor_DC_cbl_2x14AWG_drum, 305m
N000082L019A	PTP 820 Outdoor_DC_cbl_2x18AWG_drum, 305m

Cables for Space Diversity Connections

Table 9: Cables for Space Diversity Connections

P/N	Description
N000082L063A	PTP 820C,CABLE,SFP,4x4MIMO_DATA_SHARING_KIT_10M
N000082L138A	PTP 820C,CABLE,SFP,4x4MIMO_DATA_SHARING_KIT_20M
N000082L064A	PTP 820C,SOURCE_SHARING_10M
N000082L137A	PTP 820C,SOURCE_SHARING_20M

Cat-5e Cable and Specifications

Table 10: CAT-5e Cable and Specifications

Marketing Model	Description
N000082L016A	PTP 820 CAT5E Outdoor 100m drum

This cable has the following specifications:

- Suitable for:
 - Fast Ethernet
 - Gigabit Ethernet
 - PoE

Cable Design – The numbers in the figure below refer to the items listed beneath the figure.

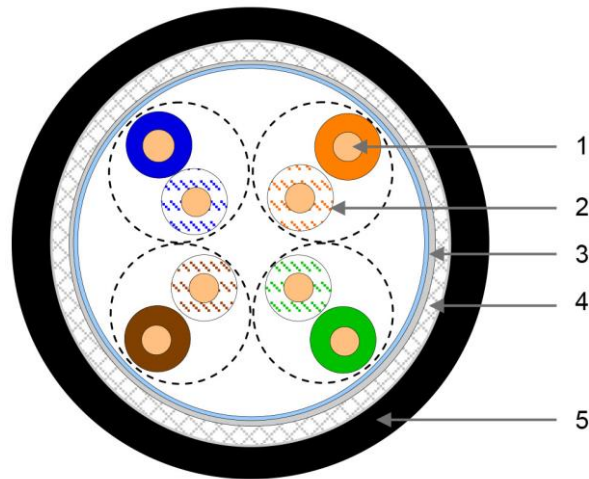


Figure 21: Cable Design

- [1] Conductor
- [2] Insulation
- [3] Screen: Alu/Pet foil. Alu outside
- [4] Tinned copper braid
- [5] Jacket

Table 11: CAT-5e Cable Color Code

Pair	Wire A	Wire B
1	WHITE-blue	BLUE
2	WHITE-orange	ORANGE
3	WHITE-green	GREEN
4	WHITE-brown	BROWN

Outdoor CAT-5e Cable Specifications

Table 12: Outdoor CAT-5e Cable Specifications – Electrical Requirements

Cable type	CAT-5e SFUTP, 4 pairs, according to ANSI/TIA/EIA-568-B-2	
Wire gage	24 AWG	
Stranding	Solid	
Voltage rating	70V	
Shielding	Tinned copper Braid (Coverage: >=80%) + Aluminum Foil	
Pinout		

Table 13: Outdoor CAT-5e Cable Specifications – Mechanical/ Environmental Requirements

Jacket	UV resistant
Outer diameter	6-10 mm
Operating and Storage temperature range	-40°C - 85°C
Flammability rating	According to UL-1581 VW1, IEC 60332-1
RoHS	According to Directive/2002/95/EC

Outdoor DC Cable Specifications

Table 14: Outdoor DC Cable Specifications – Mechanical/ Environmental Requirements

Jacket	UV resistant
Outer diameter	7-10 mm
Operating and Storage temperature range	-40°C - 85°C
Flammability rating	According to UL-1581 VW1, IEC 60332-1
RoHS	According to Directive/2002/95/EC

Securing the Cables

All cables should be secured at every meter on-site using either a T-Rups kit, Marketing Model “Outdoor Ties”, or cable clamps. When using the T-Rups kit, take special care to apply the proper amount of force in order to avoid damage to the cable. This is especially important for optical (SFP) cables.

Special Instructions for use of Glands



Note

Each RFU-D-HP unit is supplied with one gland. If additional glands are required, they must be ordered separately, in kits of five glands each.

Table 15: Glands Kit

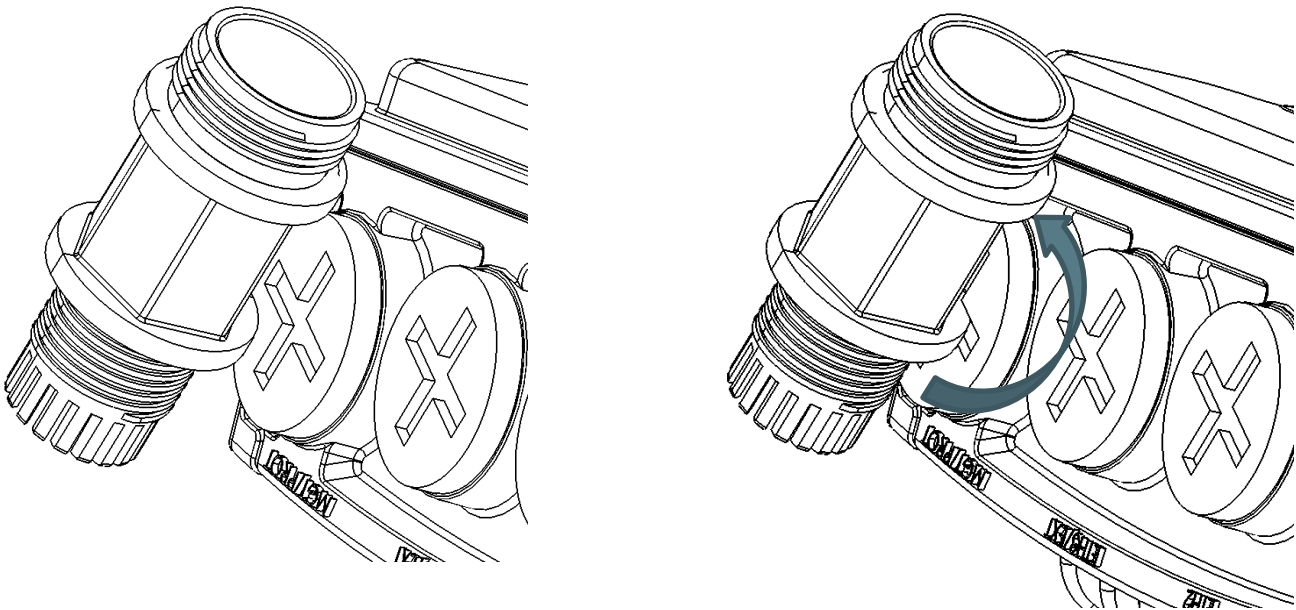
P/N	Description
N00082L014A	PTP 820 Glands_x5_KIT

In addition, gland caps can be ordered to protect the cable and connector from damage when elevating the cable and gland to the radio unit. See Step 5 in Section Chapter 0, *General Installation Procedure*. Gland caps are ordered separately, in kits of 10 caps each.

Table 16: Gland Caps

Marketing Model	Marketing Description
N80082L009A	PTP 820E Cable Protection Cap (Qty 10)

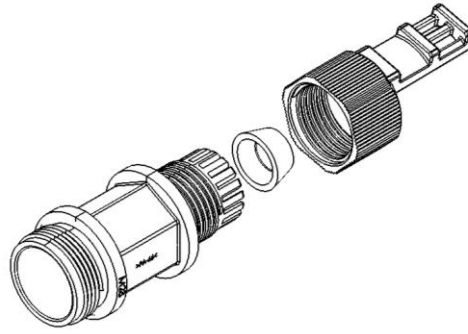
In order to remove the plastic plugs for the unit, you can use the flange of supplied glands to disconnect them. See figures below.



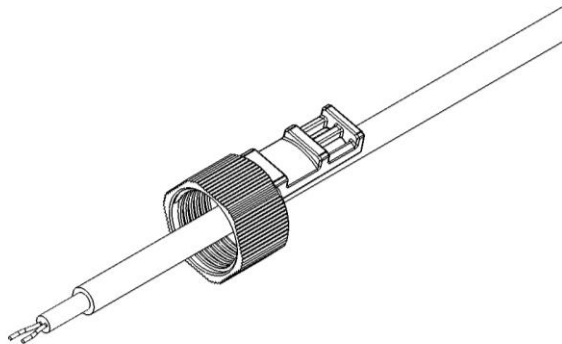
General Installation Procedure

This procedure applies to all cable types, and explains how to install the cables using long glands. The gland is supplied assembled.

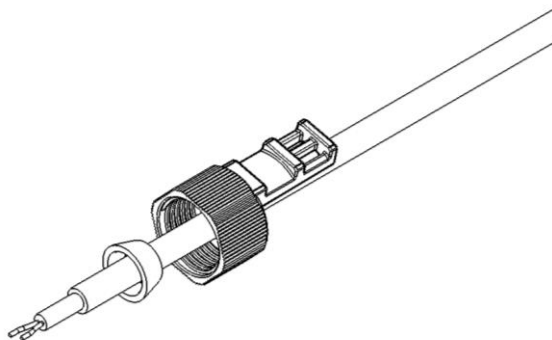
- 1 Before inserting a cable, you must disassemble the gland cap and gland rubber from the gland body.



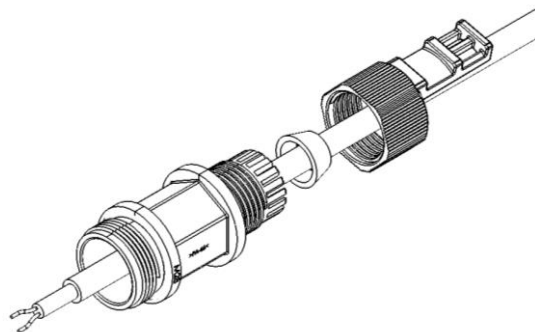
- 2 Slide the gland cap into the cable.



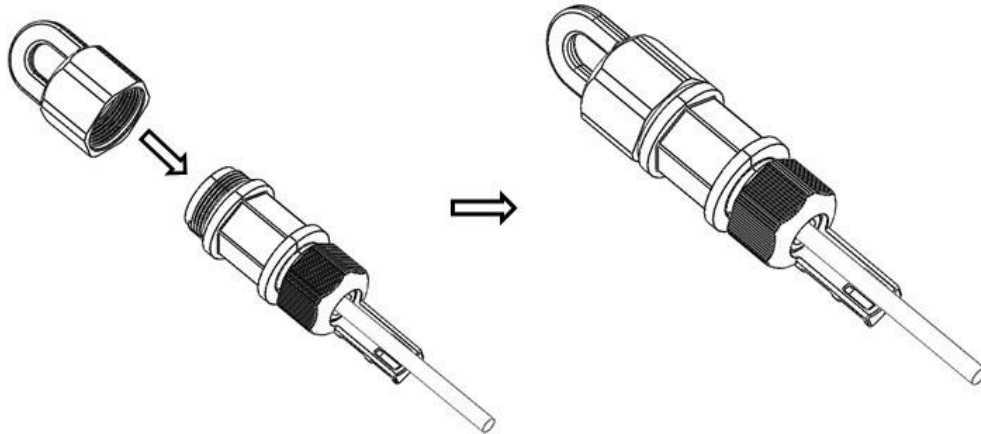
- 3 Slide the gland rubber into the cable.



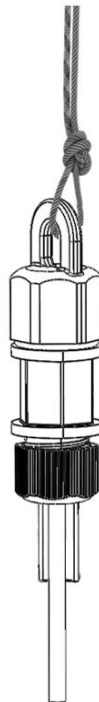
- 4 Slide the cable into the body of the gland. If you are using a gland cap (see Step 5), make sure to leave enough space for the gland cap to fit into the gland without disturbing the cable.



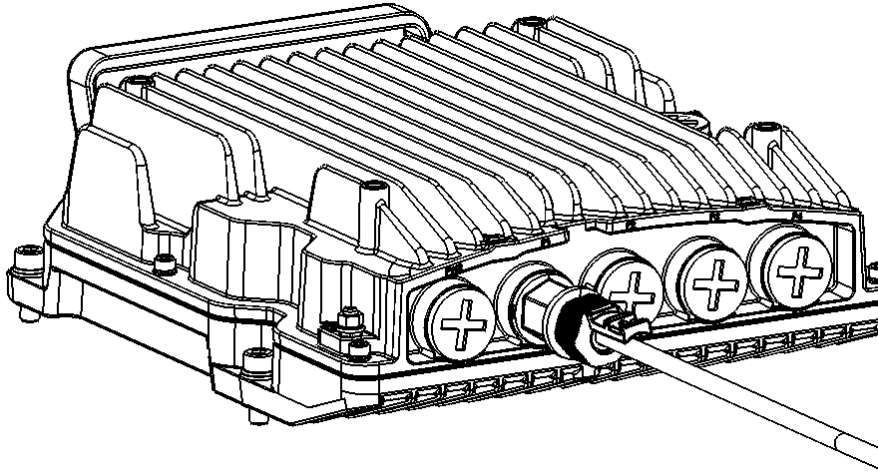
- 5 Optionally, after securing the cable into the body of the gland, you can close the other side of the gland with an M28 gland cap. The gland cap protects the cable and connector from damage when elevating the cable and gland to the radio unit.



- 6 The M28 gland cap has a hook on top. After attaching the gland cap to the gland, you can connect a rope to the hook and use this to lift the gland and cable up to the radio unit. Before screwing the gland into the radio unit, you must remove the gland cap.



- 7 If you used an M28 gland cap to close the gland when raising the gland and cable to the radio unit, remove the gland cap from the gland at this point by unscrewing the cap.
- 8 Connect the cable to the port.
- 9 Screw the gland into the radio unit until there is full contact between the gland and the radio unit.

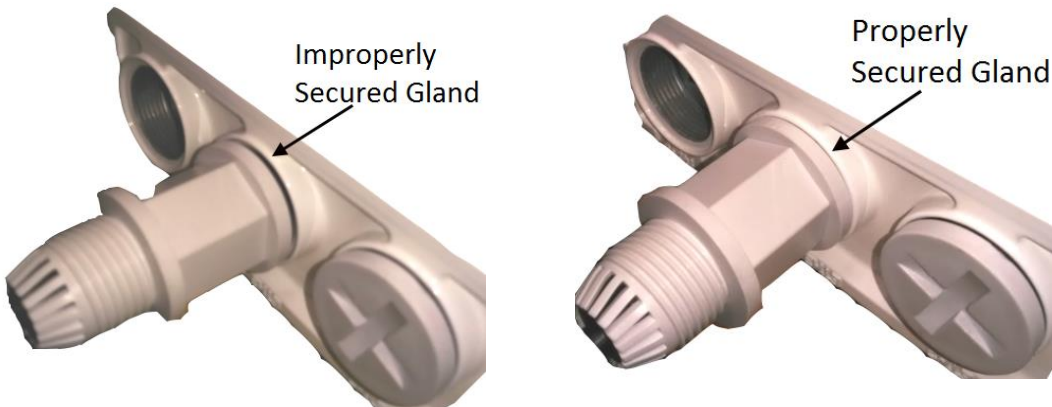


Important Note! Before tightening the gland, make sure the gland is aligned with the tapped hole in the unit. Tightening the gland at an angle can ruin the thread on the gland and prevent proper sealing of the interface.

- 10 Insert the main part of the gland into the thread in the radio body and tighten until there is full contact and the gasket is fully contained between the gland and the radio and cannot be seen. Tighten the gland gently and make sure there is no resistance. If there is resistance, stop immediately, and thread out the gland. Verify that the gland thread is not damaged and tighten the gland again.



Important Note! Pay attention that the gland rubber is properly located and not damaged during the tightening of the gland cap.
If the gland thread is damaged do not use it!



- 11 Tighten the rear portion of the gland onto the main part of the gland and make sure that the main part of the gland does not have an additional swivel after the rear portion is secured.



If the main portion of the gland is rotated while the rear portion is seizing the cable, this may ruin the cable connector.

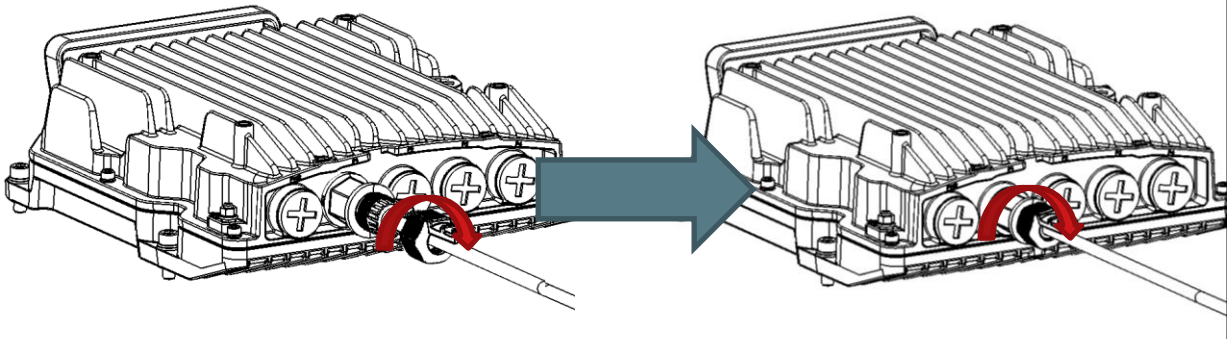
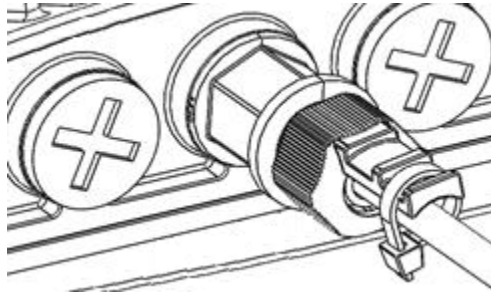


Figure 22: Tightening the Front Portion of the Gland

Figure 23: Tightening the Rear Portion of the Gland

- 12 Secure the cable to the lip of the gland using a tie wrap.

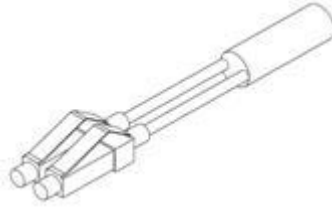


Connecting an Optical Fiber Cable and SFP

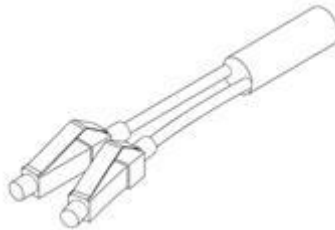
When using an optical fiber cable, the cable must be inserted in port P2. A separate DC power cable must be used to connect the RFU-D-HP to an external power source. See *Connecting a DC Power Cable*.

To connect an optical fiber cable and the SFP transceiver:

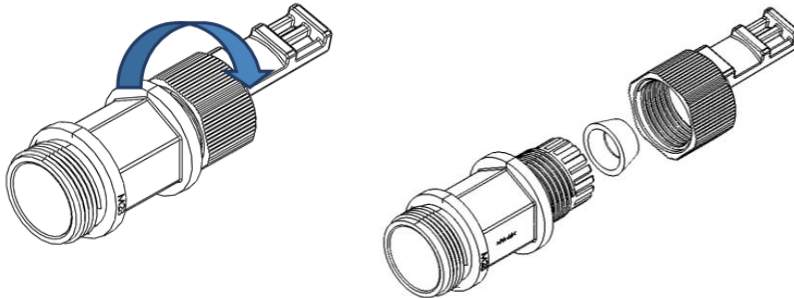
- 1 Use a pre-assembled cable.



- 2 Split the connector into two separate LC connectors (one for each fiber).

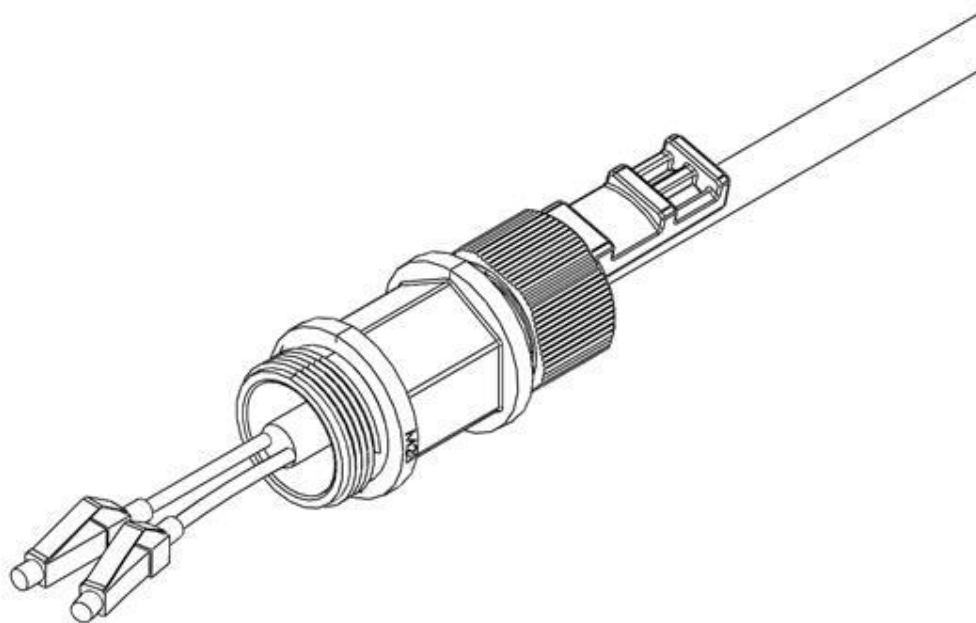


- 3 Remove the gland cap and rubber from the gland body.



- 4 Slide the gland cap into the cable.
- 5 Slide the rubber into the cable.

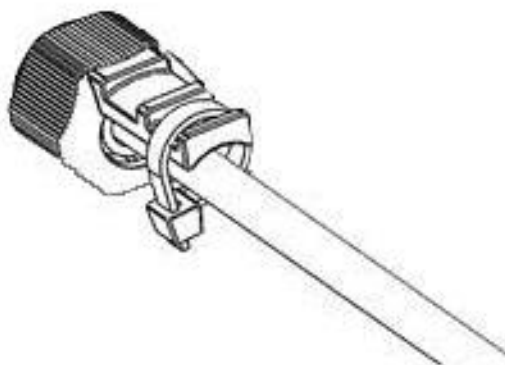
- 6 Insert the fibers with the connectors one by one into the cable gland.



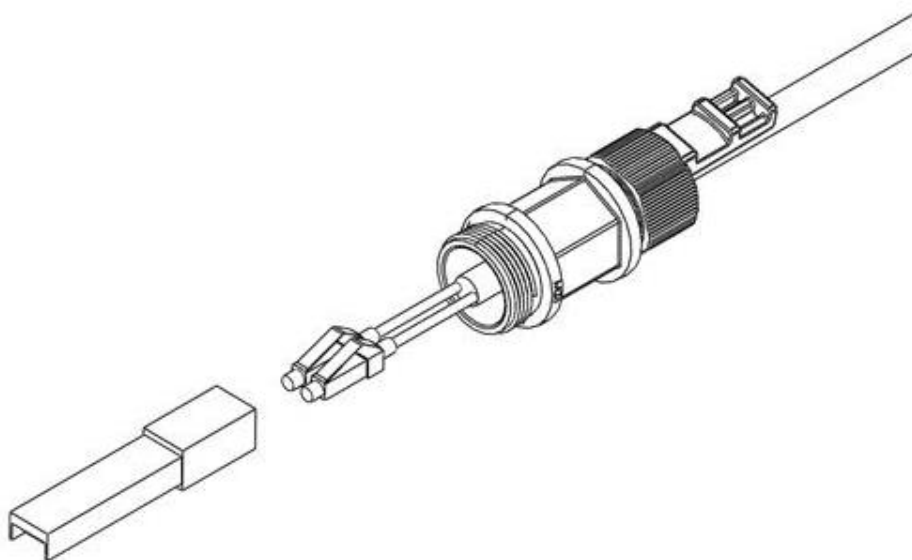
- 7 Secure the cable to the lip of the gland using a tie wrap.



Important Note! If you are raising the cable to a radio unit on a tower, this step is crucial to prevent the cable from slipping from the gland, which could damage the connector.



- 8 Connect the fibers to the SFP transceiver. Listen for the “click” to ensure that they are fully inserted.

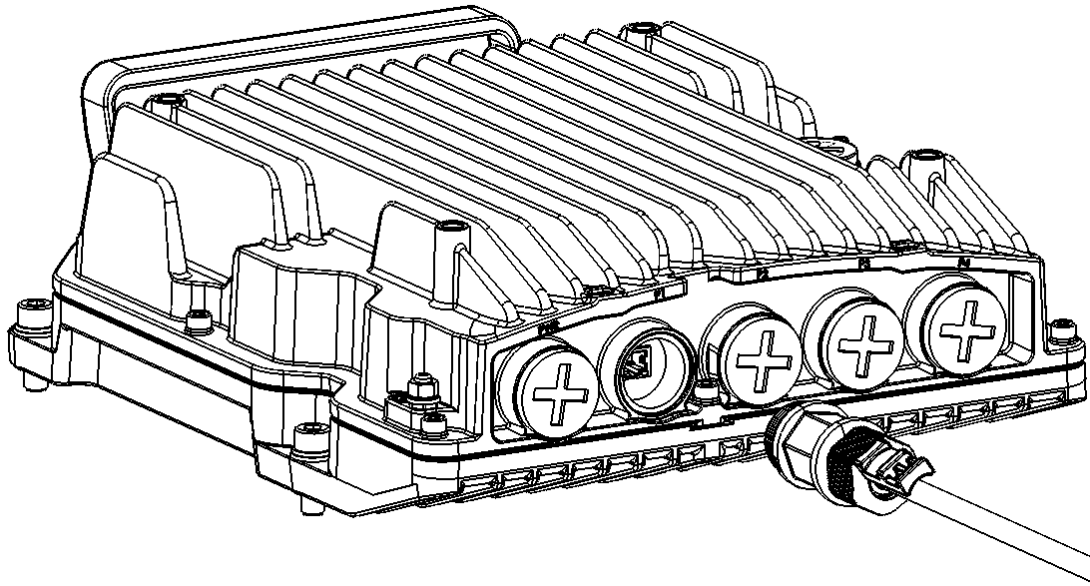


- 9 Remove the tie wrap securing the cable to the gland.



Note: A new tie wrap must be used to secure the cable to the gland at the end of the procedure, as described in Step 13.

- 10 Connect the connector into the RFU-D-HP connector.



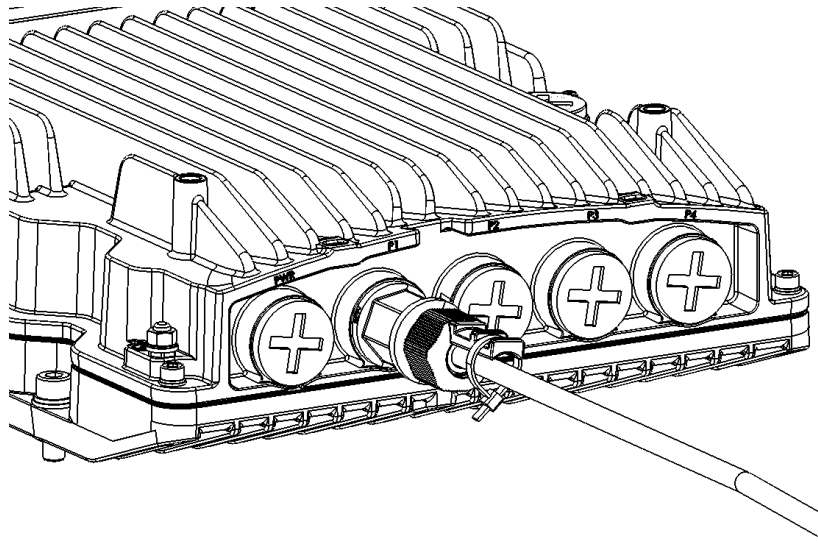
- 11 Tighten the gland to the radio unit until there is full contact between the gland and the radio unit.
- 12 Tighten the gland cap.



Important Note! Before tightening the gland, make sure the gland is aligned with the tapped hole in the unit.

Tightening the gland at an angle can ruin the thread on the gland and prevent proper sealing of the interface. Tighten the gland gently and make sure there is no resistance. If there is resistance, stop immediately, thread out the gland, and verify that the gland threads are not damaged. Then, tighten the gland again. **If the gland thread is damaged do not use it!**

- 13 Secure the cable to the gland using a tie wrap.



Connecting a DC Power Cable

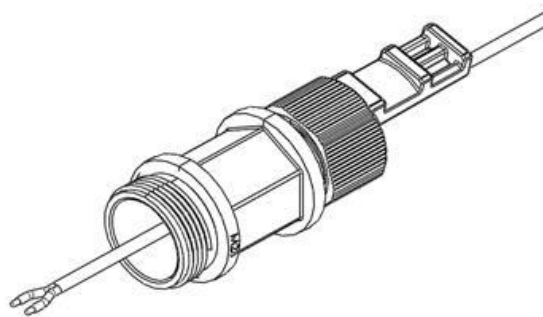
A DC power cable must be connected to port P1 to provide power from an external power source to the RFU.

To connect a DC power cable:

- 1 Strip off 45 mm from the cable jacket.
- 2 Expose 10 mm at the edge of each of the two wires.



- 3 Insert the power cable into the gland.



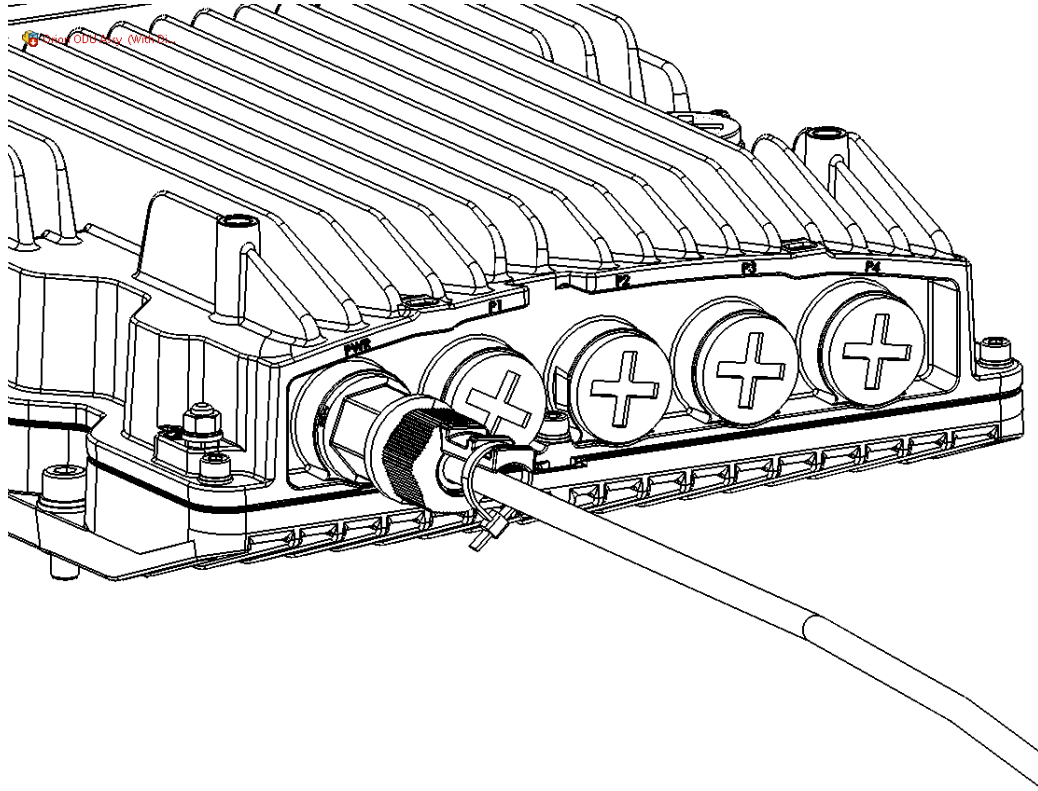
- 4 Insert the power cable wires into the power connector.

- 6 Plug the power cable with connector into the PWR port.
- 7 Screw the gland into the radio unit



Important Note! Before tightening the gland, make sure the gland is even with the cover. Tighten the gland gently and make sure there is no resistance. If there is resistance, stop immediately and verify that the gland is not being inserted at an angle. Tightening the gland at an angle can ruin the thread on the gland and prevent proper sealing of the interface.

- 8 Tighten the gland cap.
- 9 Secure the cable to the gland with a tie wrap.



Connecting a CAT-5e/CAT-6 Data Cable

If you need to assemble the CAT-5e or CAT-6 cable, follow the instructions in section 0, *Preparing the CAT-5e or CAT-6 Cable and Plug-in Field*, then proceed to section 0, *Connection of CAT-5e or CAT-6 Cable* to RFU-D-HP.

If you using a pre-assembled CAT-5e or CAT-6 cable, follow the instructions in section 0, *Preparing the CAT-5e or CAT-6 Data Cable Already Assembled*, then proceed to section 0, *Connection of CAT-5e or CAT-6 Cable* to RFU-D-HP.



Note: To ensure proper grounding and connectivity, it is recommended to use pre-assembled CAT-5e or CAT-6 cables.

Preparing the CAT-5e or CAT-6 Cable and Plug-in Field



Important Note! To ensure proper grounding, the RJ-45 plug must be shielded, with a crimping tail.



Table 17: Materials for Preparing Ethernet Data Cables

P/N	Description
N000082L016A	PTP 820 CAT5E Outdoor 100m drum
N000082L172A	PTP 820 CAT6A Outdoor Cable 305m drum
N000082L014A	PTP 820 Glands_x5_KIT
N000082L173A	PTP 820 High Speed GND Kit for CAT6A Cable
N000082L073A	PTP 820 GBE_Connector_kit

To prepare the CAT-5e or CAT-6 cable and plug-in field:

- 1 Prepare the gland and insert the cable, as described in *General Installation Procedure* on page 43.
- 2 Strip off approximately 45 mm of the outer insulation jacket from the CAT-5e or CAT-6 cable.
- 3 Do not strip off the end of the cable shield, but rather, twist the shield to form a braid.



- 4 Roll back the foil shield insulation and wrap the drain wire around the foil. Do not remove any insulation from the conductors.
- 5 Align the colored wires.



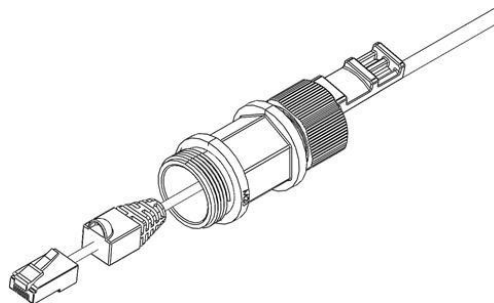
Note:

Cord colors should be matched to the same pins on both ends of the cable.

- 6 Trim all wires to the same length. About 12 mm on the left should be exposed from the inner sheath.
- 7 Separate the wires and place the twisted shield between the separated wires.



- 8 Insert the wires into the RJ45 plug. Verify that each wire is fully inserted into the front of the RJ45 plug and in the correct order, according to the pinouts shown in Section Chapter 0, *Outdoor CAT-5e Cable Specifications*. The sheath of the CAT-5e or CAT-6 cable should extend into the plug by about 13 mm and held in place by the crimp.
- 9 Extend the cable jacket with the shield into the connector about 5 mm for strain relief and shielding connection.



- 10 Wrap the twisted braid firmly around the cable jacket and let the crimping tail of the RJ45 plug envelop it.



Important Note! To ensure proper grounding, it is essential that the twisted braid be firmly connected to the RJ45 plug.



Twisted Braid Enveloped by Crimping Tail

- 11 Crimp the RJ45 plug with the crimp tool. Make sure the twisted shield is crimped firmly to the RJ45 plug.



- 12 Verify that the wires ended up the correct order and that the wires extend to the front of the RJ45 plug and make good contact with the metal contacts in the RJ45 plug.
- 13 Push back the CAT-5e or CAT-6 plug cover on the connector plug.

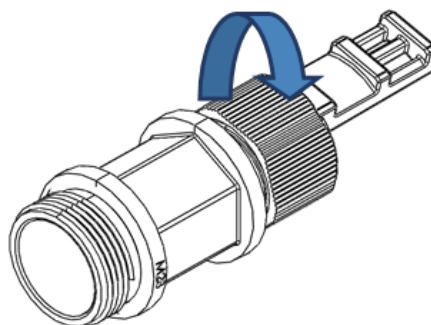


Note: It is recommended that the newly prepared cable be tested with a Cable Analyzer such as the FLUKE DTX-1800 (or the equivalent), to make sure the cable complies with ANSI/TIA/EIA-568-B-2. Make sure to verify both connectivity and grounding continuity at both ends of the cable.

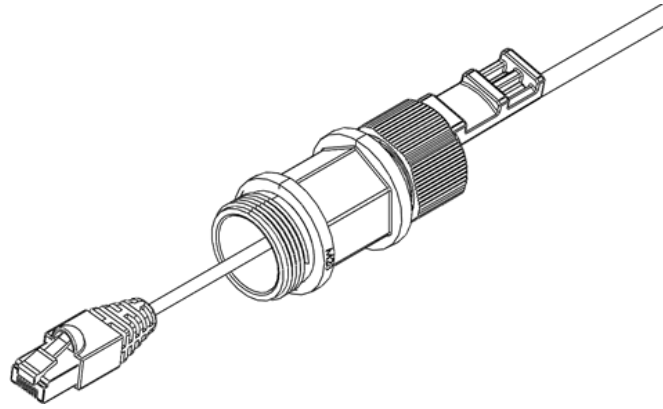
Preparing the CAT-5e or CAT-6 Data Cable Already Assembled

To prepare the CAT-5e or CAT-6 cable already assembled:

- 1 Release the gland cap and the gland rubber slightly.



- 2 Insert the CAT-5e or CAT-6 cable into the gland cap and into the rubber gland.

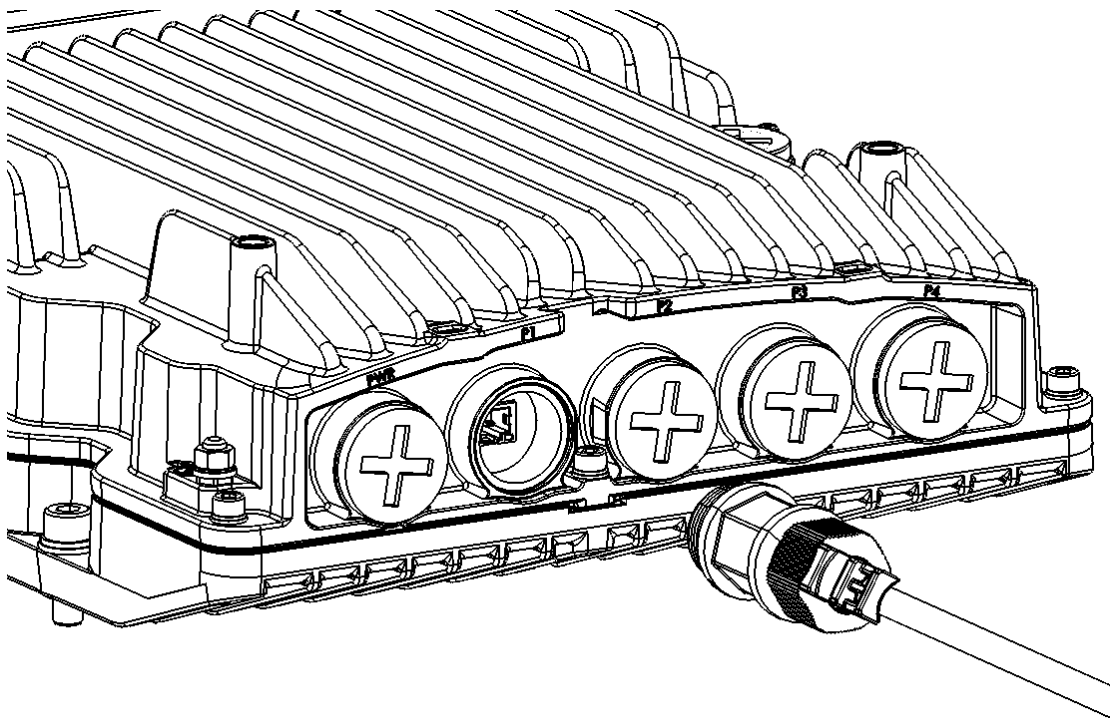


- 3 Insert the CAT-5e or CAT-6 cable into the gland body.

Connection of CAT-5e or CAT-6 Cable to RFU-D-HP

To connect the CAT-5e or CAT-6 cable to the RFU-D-HP:

- 1 Remove the relevant cap from the RFU-D-HP radio. You can use the side of the gland to unscrew the cap.
- 2 Connect the cable to the RFU-D-HP.



- 3 Screw the gland into the radio unit.



Important Note! Before tightening the gland, make sure the gland is even with the cover. Tighten the gland gently and make sure there is no resistance. If there is resistance, stop immediately and verify that the gland is not being inserted at an angle. Tightening the gland at an angle can ruin the thread on the gland and prevent proper sealing of the interface.

- 4 Tighten the gland cap.
- 5 Secure the cable to the gland using a tie wrap.

Chapter 5 General Notes Concerning All Installation Procedures

Some of the configurations described in this manual may not be supported with every Release version. For up-to-date information about which configurations are supported, refer to the Release Notes for the Release version you are using.

Note that 4 and 5 GHz links are currently supported only with diplexer-based branching and remote-mount configurations.

Since the RFU-D-HP architecture is of a dual core nature, each dual core configuration can be considered as single core configuration hardware ready for its dual core counterpart. Therefore, you should follow the procedure for *2+0 SP* installation if you want to install a *1+0 SP HW ready for 2+0 SP*.

One of the major benefits of RFU-D-HP and its dual core architecture is that upgrading can be performed remotely by uploading the correct activation key.

Before starting an installation, use a leveler to make sure that the poles are 100% vertical. You need to check both sides of each pole at 90 degrees separation. This is a critical step in any link but most important when installing XPIC.



Important Note! Do not remove the transparent pressure windows located on the antenna interfaces.

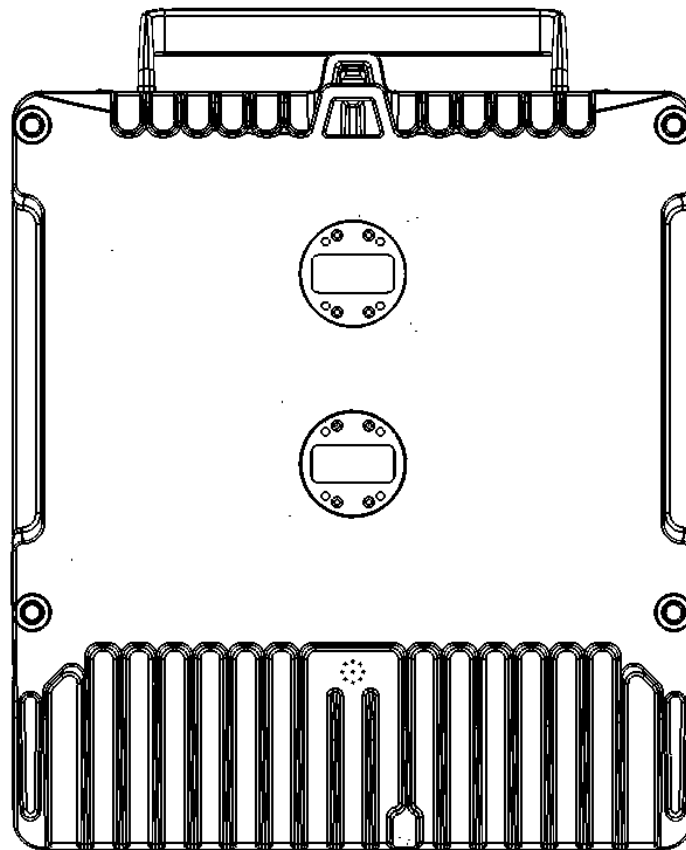


Figure 24: Transparent Pressure Windows

Chapter 6 Installation Instructions for Configurations with Diplexer-Based Branching

Torque Requirements

When tightening the captive screws, use 20 Nm torque for radio-antenna, radio-mediation device, and mediation device-antenna connections. In order to avoid misalignment, screws should be tightened progressively.

For installing the diplexer unit on the radio, use 5 Nm torque.

When fastening a waveguide to the radio or mediation device, use the following torque, according to frequency and screw type:

- 4-5 GHz: M6: 10 Nm
- 6 GHz: M5/#10-32: 3.5 Nm
- 7/8-11 GHz: M4/#8-32: 2.5 Nm

In addition, when connecting the diplexer to the radio and the radio to the mediation device, screws should be cross-tightened gradually. In other words, partially tighten one screw, then partially tighten the opposite screw. For example, if you start with the screw on the upper left, proceed to the screw on the lower right, then the upper right, then the lower left. Tighten each screw partially, then in the same order, tighten the screws further until each screw is fully tightened.

General Radio Installation

The RFU-D-HP has been designed for easy installation, with various installation options to provide maximum flexibility. In most cases, the Diplexers unit should be attached to the antenna or mediation device first. Then, attach the radio unit to the Diplexers unit.

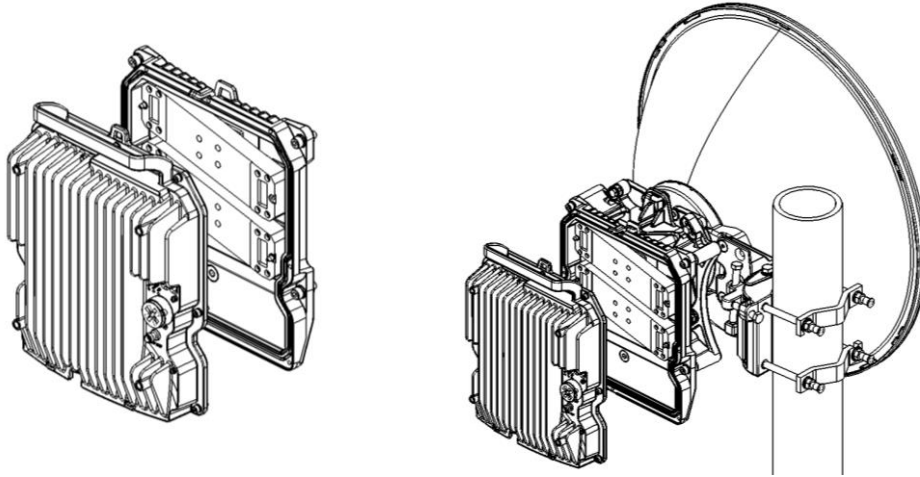


Figure 25: RFU-D-HP Installation – Attaching the Diplexers Unit Before the Radio Unit

The RFU-D-HP radio can also be assembled to the diplexers kit prior to installation, then mounted to the antenna or mediation device as a single unit. For details, see *Installing the Diplexer on the Radio* on page 63.


Installing the Diplexer on the Radio

For configurations that use diplexers, RFU-D-HP is delivered as two separate components: a generic radio unit and a diplexer unit. This section explains how to attach the diplexer unit to the radio unit.



Note: Mounting of the diplexer unit to the radio unit should be performed by certified personnel in a clean, temperature and humidity-controlled environment.

List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO UNIT	1	See Section 0,  Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in Radio Unit
2	RFU-D-HP Diplexer Unit	1	See Section Chapter 0, <i>Diplexer Unit</i>

Required Tools

- Torque Wrench With Metric Hexagon Socket Key Wrench #4 (Allen Key)

Procedure

- 1 Prior to the installation, remove the sticker which is covering the diplexer ports on the Diplexer unit and the sticker that covers the TRX ports on the radio unit.
- 2 Position the diplexer unit on the radio unit so that the two location pins mounted on the TRX ports of the diplexer unit (Figure 26) fit into the corresponding holes in the radio unit (Figure 27).

- 3 Attach the diplexer to the TRX using the two location pins. Make sure that the hook and the carrying handle are on the same side in both the radio unit and the diplexer unit (Figure 29).

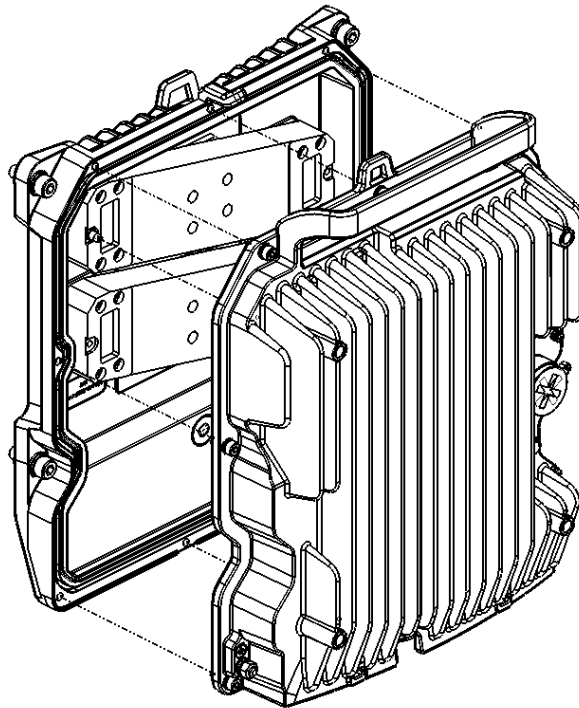


Figure 26: Fitting the Diplexer Unit to the Radio Unit - Radio Side

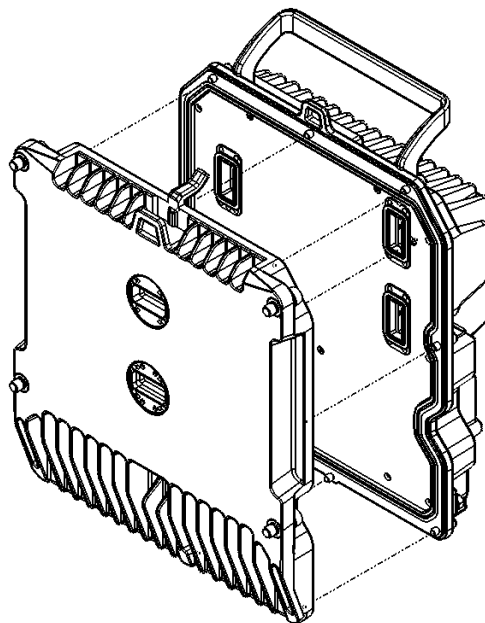


Figure 27: Fitting the Diplexer Unit to the Radio Unit - Diplexer Unit Side

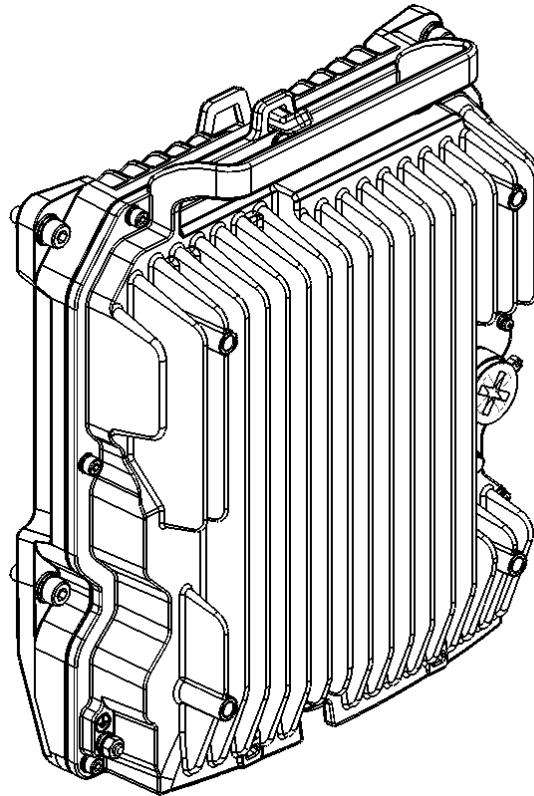


Figure 28: Radio and Diplexer Units Together

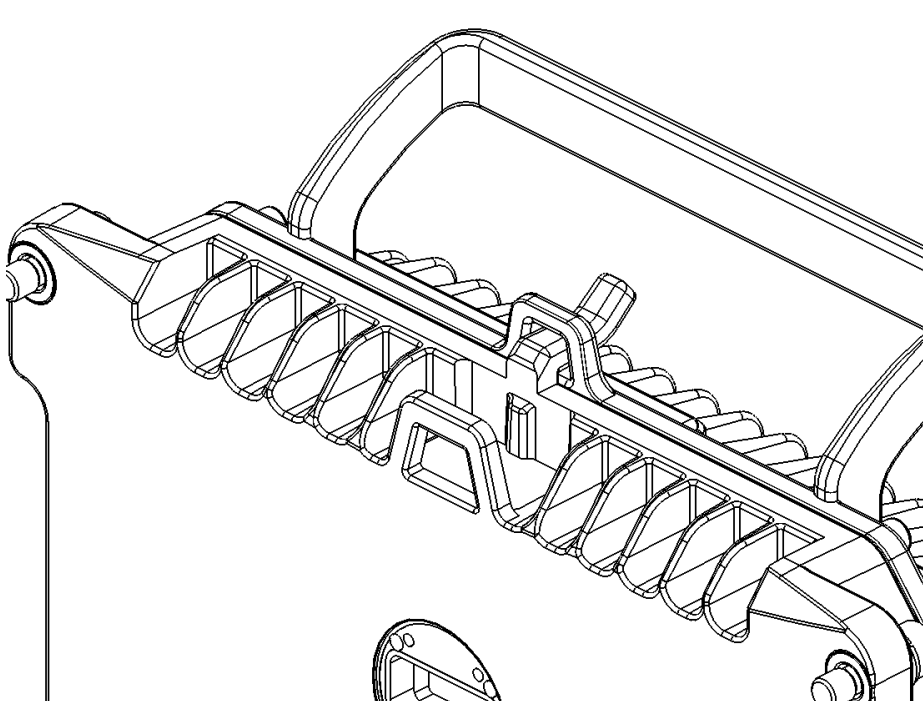


Figure 29: Hook and Carrying Handle

- 4 Secure the diplexer unit to the radio unit using the eight M5 screws supplied with the radio unit. First, gently tighten the screws in the order shown in Figure 30. Then strongly tighten the screws in the same order.

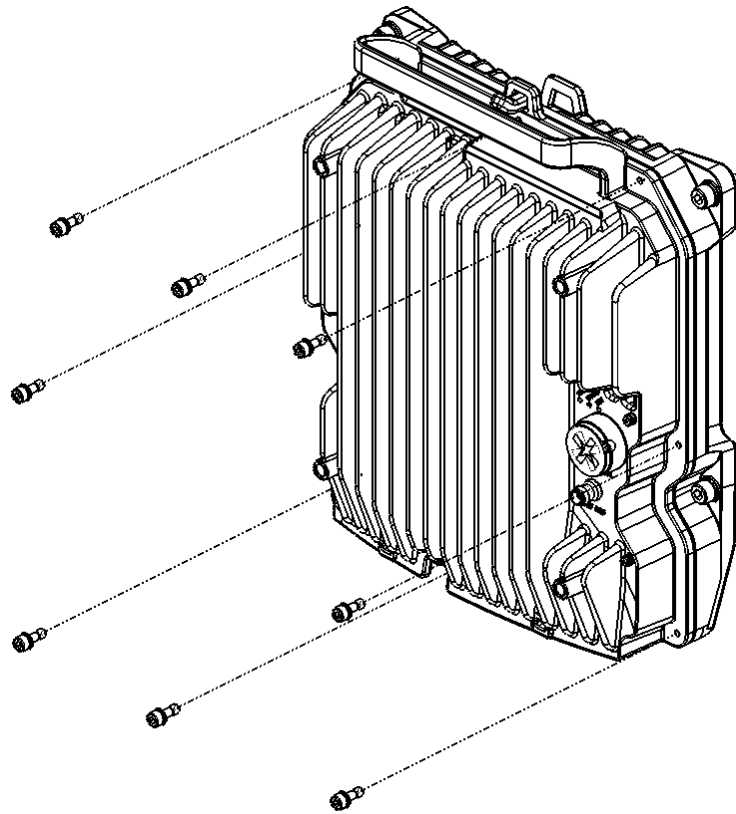


Figure 30: Securing the Diplexer Unit to the Radio Unit

- 5 Proceed to install the RFU-D-HP in the desired configuration, as described in the following sections.

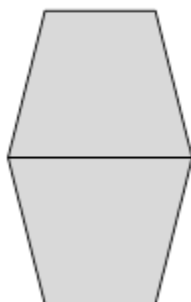
2+0 Dual Polarization Direct Mount




Note:

This procedure can also be used for 1+0 DP HW ready for 2+0 DP configuration.

CCDP



List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radio Unit	1	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p>
			Radio Unit
2	RFU-D-HP Diplexer Unit	1	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT KIT	1	DXDH-MD-OMT-ff
4	CIRC./CI RC. Adaptor	1	Per Antenna Vendor

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

Procedure

- 1 Prior to the installation, follow the antenna manufacturer's instructions to use the circular adaptor. (Remove the existing rectangular transition, swap the O-ring, and install the circular transition instead.)

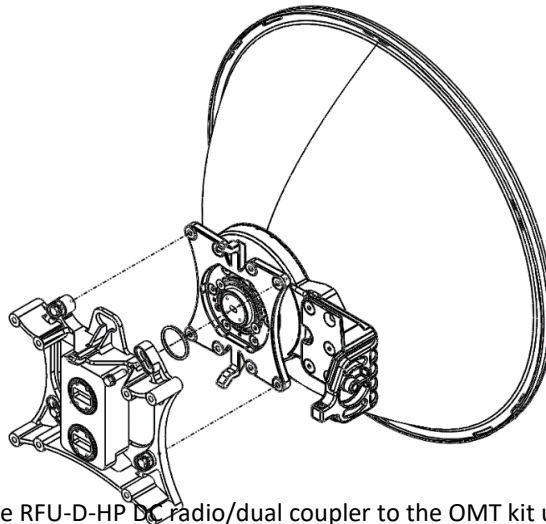


- 2 Connect the OMT kit to the antenna and secure it with four screws.



Important Note!

Verify that the O-ring is properly mounted between the antenna transition and the OMT.

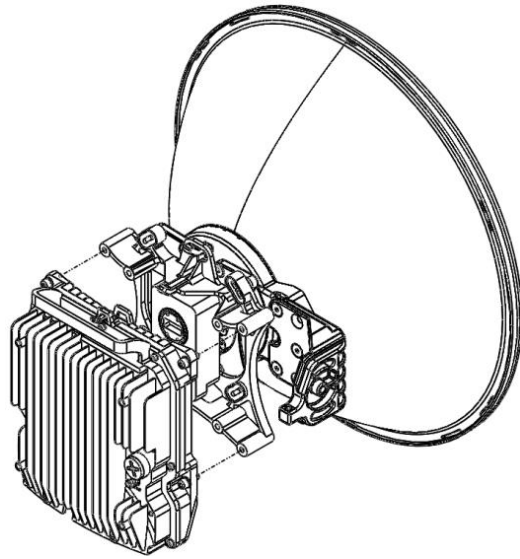


- 3 Connect the RFU-D-HP DC radio/dual coupler to the OMT kit using the four M8 captive screws and washers supplied, and tighten the screws.



Important Note!

Verify that the O-rings are properly mounted between the OMT ports and the radio.



2+0 Dual Polarization Remote Mount

This procedure is for use with Interface antennas, up to six feet.

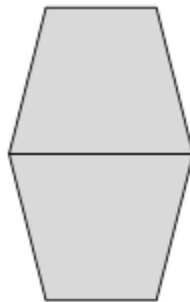
For standard interface antennas (six feet and larger), no OMT and no Circ./Circ. Adaptor are used, and the flexible waveguides are connected directly to the antenna flanges. For instructions how to connect the waveguides to the antenna flanges, refer to the antenna vendor's documentation.



Note:

This procedure can also be used for 1+0 DP HW ready for 2+0 DP configurations.

CCDP



List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radio Unit	1	See Section 0, <div style="display: flex; align-items: center;"> <div> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
			Radio Unit
2	RFU-D-HP Diplexer Unit	1	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
4	Flexible Waveguide Kit	2	

5	Adaptor Remote Mount Kit	1	DXDH-RM-MOUNT-ADPT-ff
6	Circ./Circular Adaptor	1	Per Antenna Vendor. Not used for standard interface antennas (six feet and larger).

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

Common Installation

Prior to the installation, follow the antenna manufacturer’s instructions for using the circular transition (adaptor). Remove the existing rectangular transition, swap the O-ring, and install the circular transition instead.

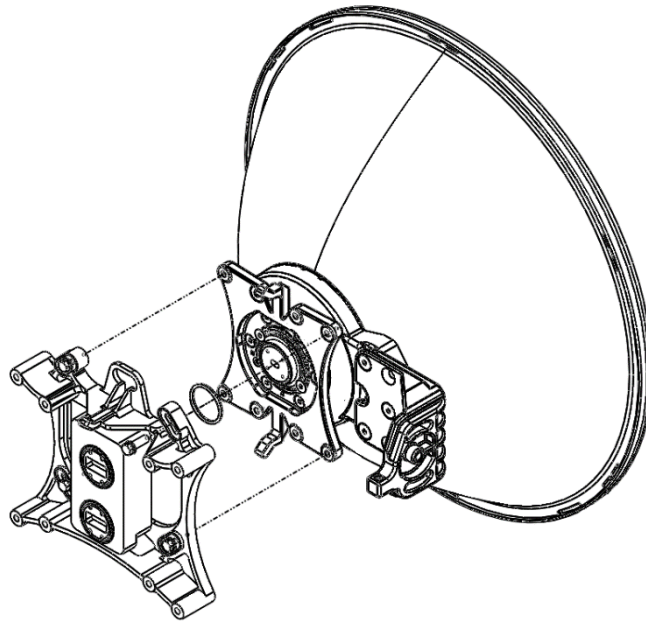


Connect the OMT kit to the antenna and secure it with four screws.

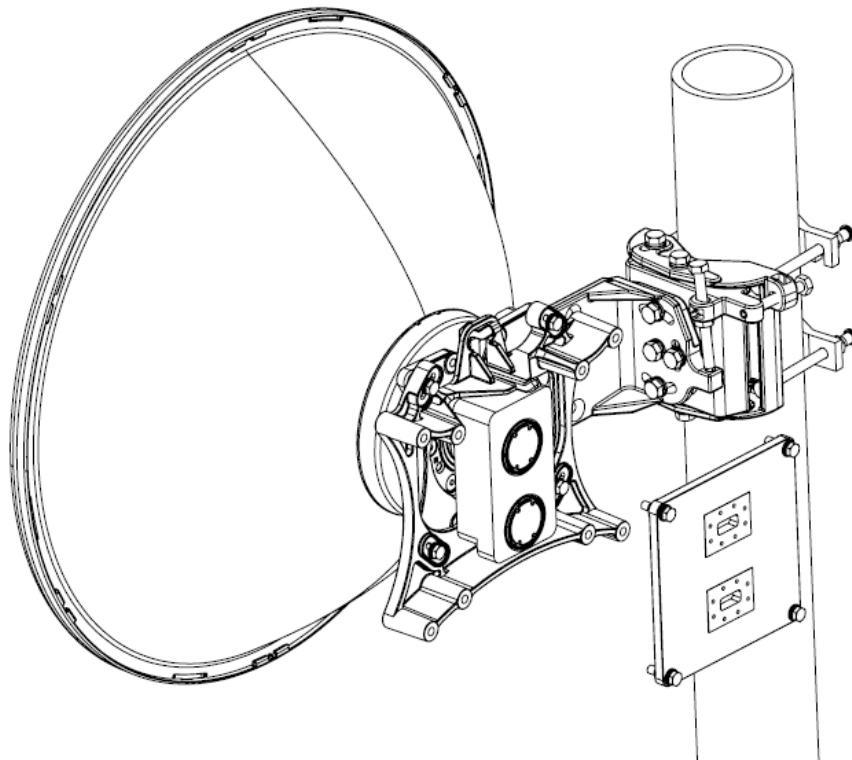


Important Note!

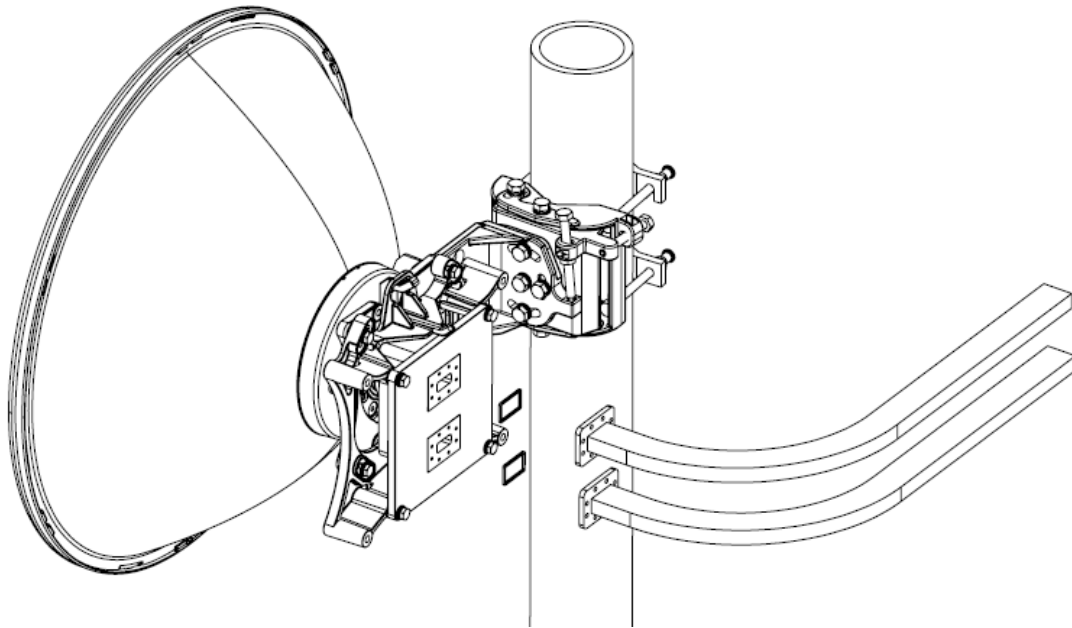
Verify that the O-ring is properly mounted between the antenna transition and the OMT.



Mount and tighten the Remote Mount Adaptor to the RFU-D-HP OMT ports using the screws supplied with the adapter kit.



Mount and tighten the O-ring and the flexible waveguide to the adaptor ports using the screws supplied with the flexible waveguide kit.



Important Note!

Verify that the O-rings are correctly mounted between the OMT ports and each flexible waveguide.

Mount and tighten the RFU-D-HP DC pole mount to the pole using the four washers and screws supplied with the RFU-D-HP DC pole mount kit:

- For 4-5 GHz configurations, use 39 Nm torque
- For 6-11 GHz configurations, use 39 Nm torque

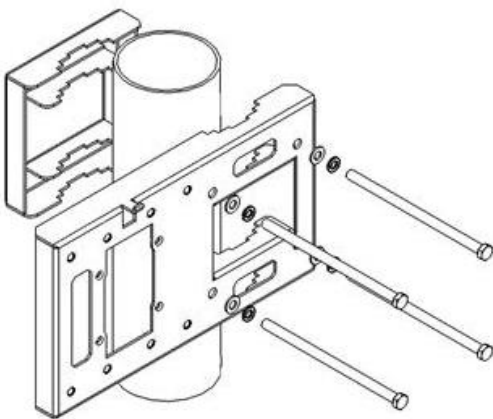


Figure 31: Remote Pole Mount Kit – 6-11 GHz

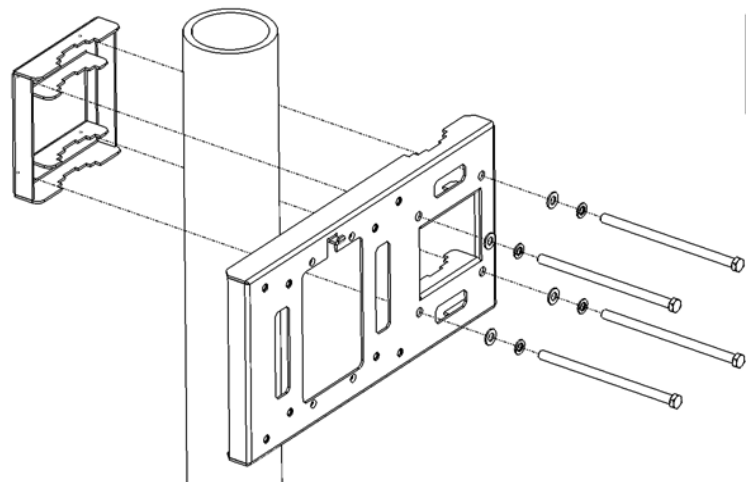


Figure 32: Remote Pole Mount Kit – 4-5 GHz

Mount and tighten the RFU-D-HP Remote Mount Adaptor plate (supplied in RFU-D-HP Adaptor Remote Mount kit) to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Adaptor Remote Mount kit.

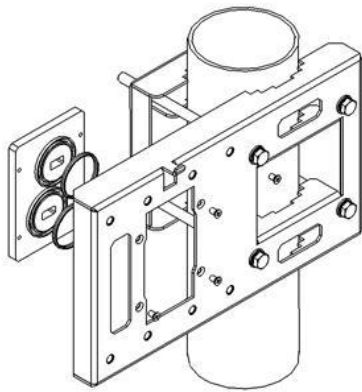


Figure 33: Remote Pole Mount Kit – 6-11 GHz

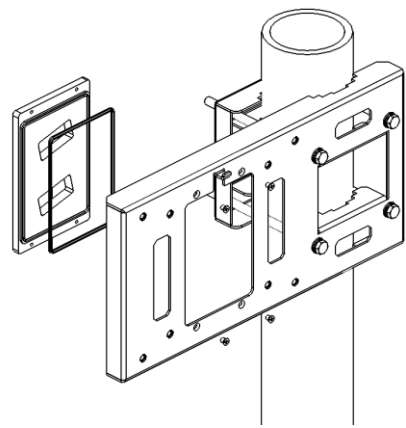
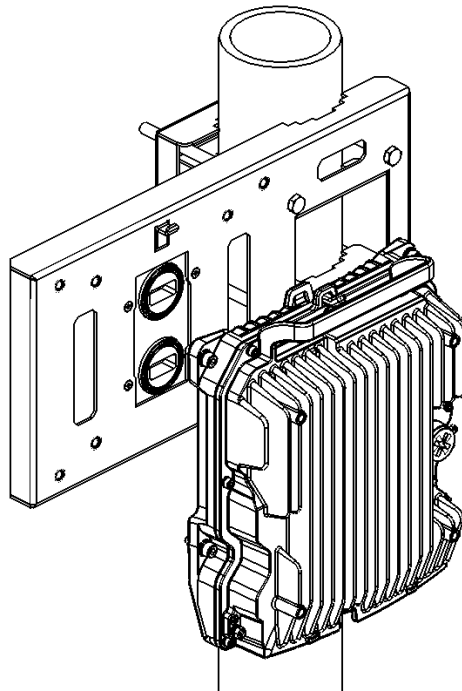
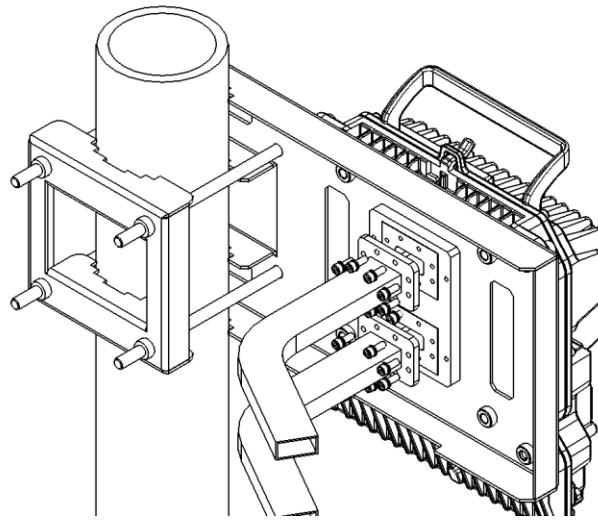


Figure 34: Remote Pole Mount Kit – 4-5 GHz

Mount and tighten the RFU-D-HP Radio to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Radio.



Mount and tighten both Flexible WGs with their O-ring to the RFU-D-HP Remote Mount Adaptor ports using the four screws supplied with each Flexible WG kit.

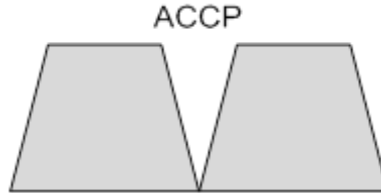


2+0 Single Polarization Direct Mount




Note:

This procedure can also be used for 1+0 SP HW ready for 2+0 SP configuration.



List of Items

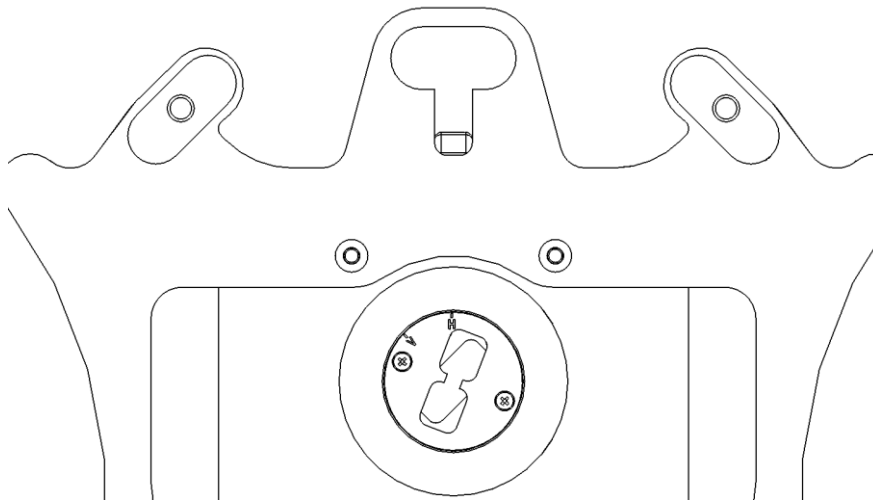
Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO	1	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p>
Radio Unit			
2	RFU-D-HP Diplexer Unit	1	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP Splitter Kit	1	FXDH-RM-MD-SPLTR-ff

Required Tools

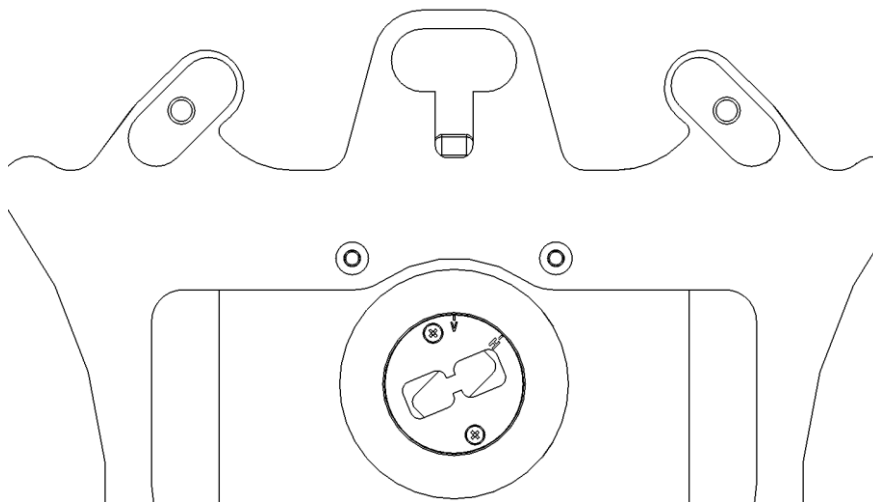
- Metric offset hexagon key set
- Phillips #1, #2 screwdriver

Procedure

- 1 Adjust the twist on the Splitter Kit. Perform one of the following steps, according to the required polarization (horizontal or vertical).
 - For horizontal polarization, locate the twist with the letter “H” on top.



- For vertical polarization, locate the twist with the letter “V” on top.

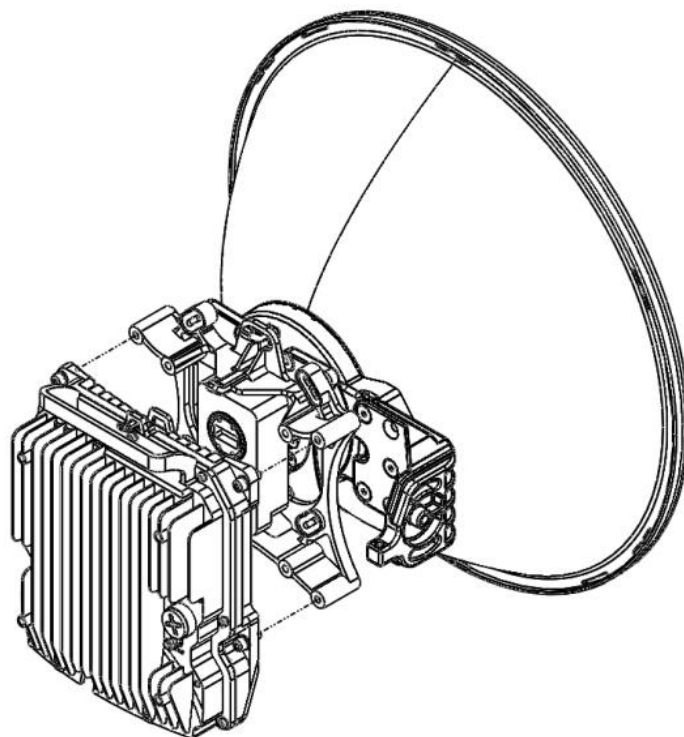


- 2 Mount and tighten the RFU-D-HP Splitter Kit on the antenna using the four M8 screws and washers.

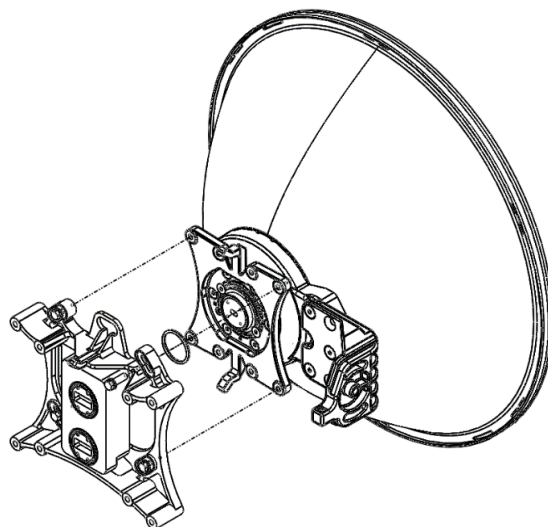


Note:

Verify that the O-ring is properly mounted between the antenna transition and the splitter.



- 3 Connect the RFU-D-HP DC radio to the splitter kit using the four M8 captive screws and washers supplied, and tighten the screws.



Note:

Verify that the O-rings are properly mounted between the OMT ports and the radio/dual coupler.

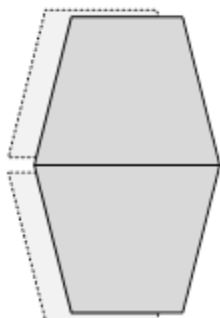
2+2 HSB Double Polarization Direct Mount




Note:

This procedure can also be used for 2 x 1+1 HSB DP HW ready for 2+2 HSB DP configurations.

CCDP - Protected



List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radio	2	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p>
			Radio Unit
2	RFU-D-HP Diplexer Unit	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT KIT	1	DXDH-MD-OMT-ff
4	RFU-D-HP Dual Coupler Kit	1	DXDH-MD-DUAL-CPLR-ff
5	CIRC./CI RC. Adaptor	1	Per Antenna Vendor

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

Procedure

- 1 Prior to the installation, follow the antenna manufacturer's instructions to use the circular adaptor. (Remove the existing rectangular transition, swap the O-ring, and install the circular transition instead.)

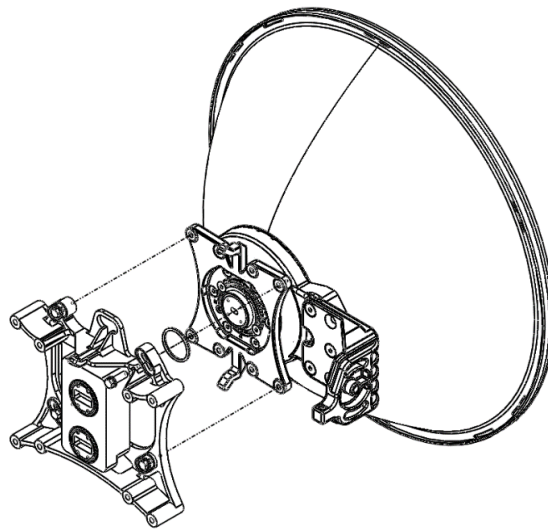


- 2 Connect the RFU-D-HP OMT Kit to the antenna and secure it with four screws. Verify existence of the O-ring.



Note:

Verify that the O-ring is properly mounted between the antenna transition and the OMT.

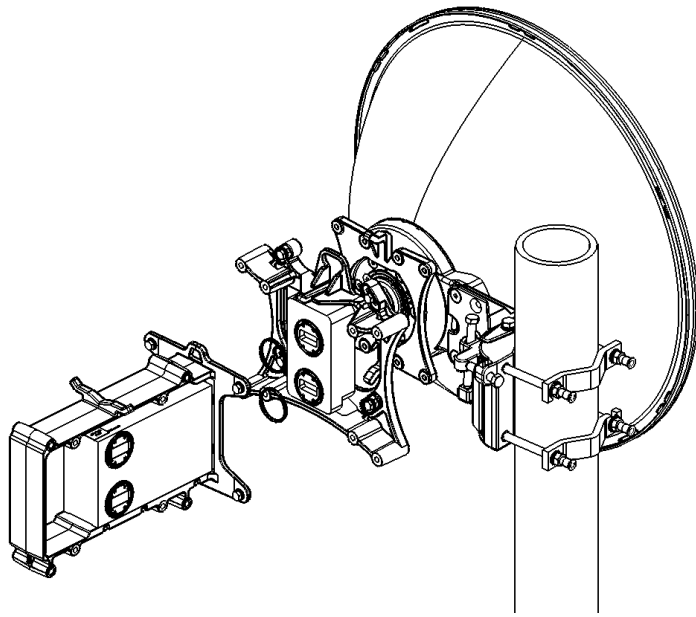


- 3 Connect the RFU-D-HP Dual Coupler Kit to the OMT Kit using four M8 screws and washers, and tighten the screws.

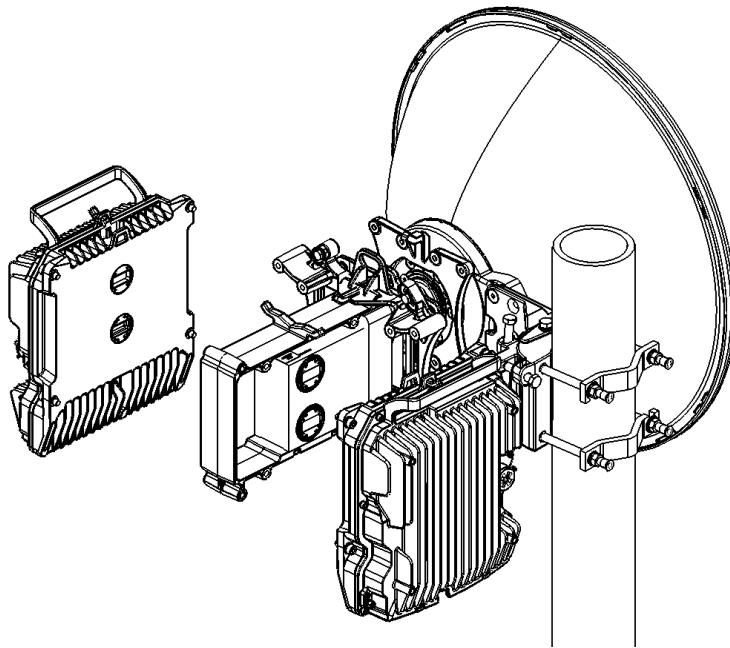


Note:

Verify that the O-rings are properly mounted between the OMT ports and the dual coupler.



- 4 Mount and tighten the RFU-D-HP DC radio unit to both sides of the Dual Coupler Kit using the supplied captive screws and washers. Pay attention that the O-rings are correctly mounted on the radio ports of the RFU-D-HP Dual Coupler.



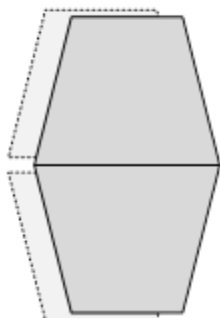
2+2 HSB Double Polarization Remote Mount




Note:

This procedure can also be used for 2x 1+1 HSB DP HW ready for 2+2 HSB DP configurations.

CCDP - Protected



List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO	2	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p>
			Radio Unit
2	RFU-D-HP Diplexer Unit	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT KIT	1	DXDH-MD-OMT-ff
4	RFU-D-HP DUAL COUPLER KIT	1	DXDH-MD-DUAL-CPLR-ff
5	FLEXIBLE WG KIT	2	

6	RFU-D-HP DC POLE MOUNT KIT	1	DXDH-RM-MOUNT-ADPT- <i>ff</i>
7	RFU-D-HP DC Adaptor Remote Mount Kit, <i>ff</i> GHz	1	DXDH-RM-MOUNT-ADPT- <i>ff</i> Not Required for 4-5 GHz
8	CIRC./CI RC. ADAPTOR	1	Per Antenna Vendor.

Required Tools

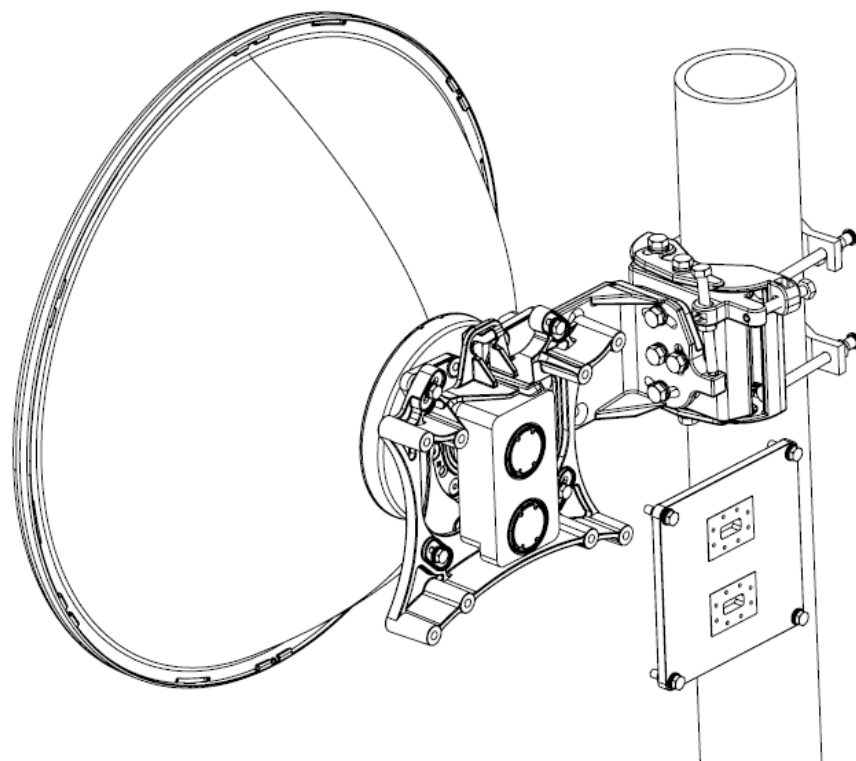
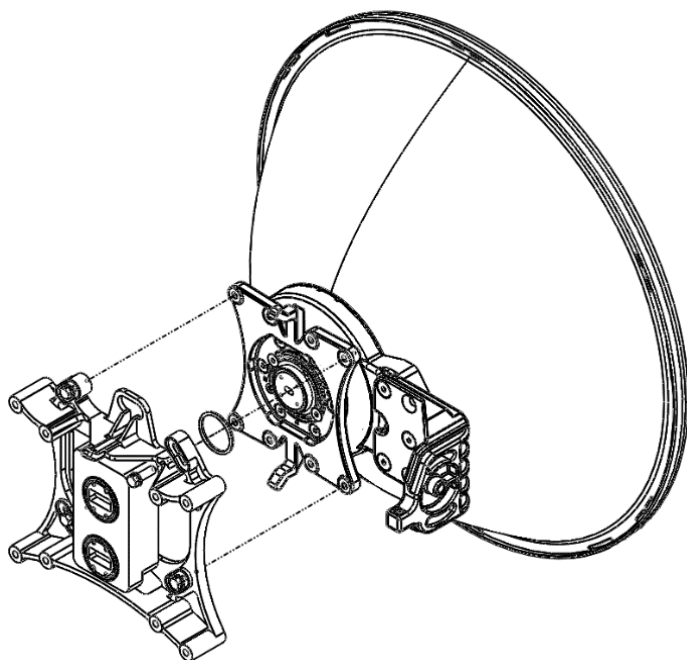
- Metric offset hexagon key set
- Metric wrench key set
- Phillips #1, #2 screwdriver

Procedure

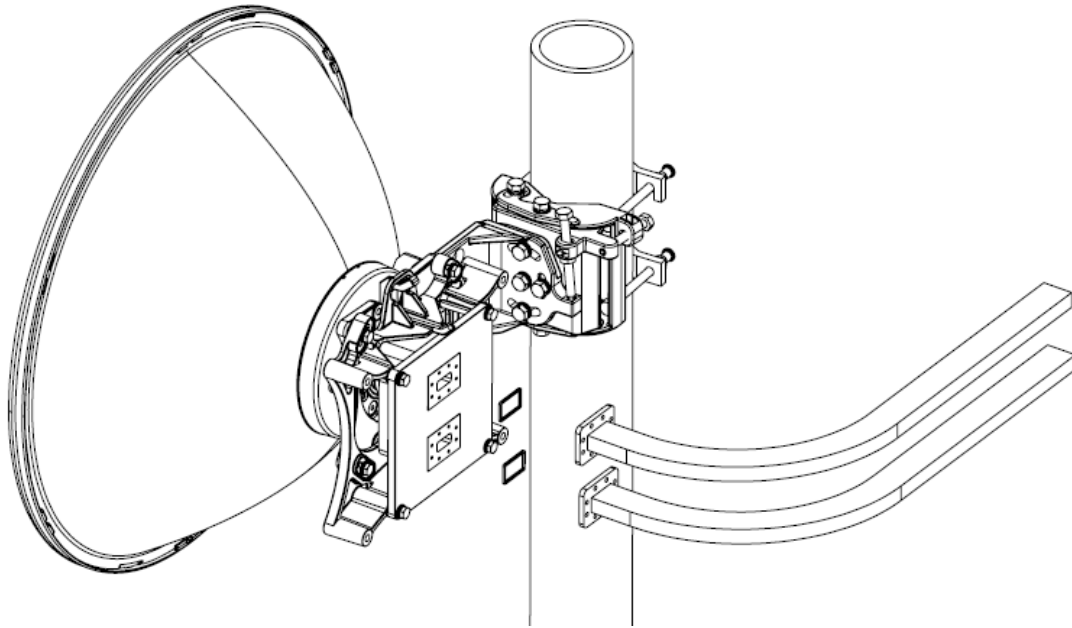
- 1 Prior to the installation, follow the antenna manufacturer’s instructions to use the circular adaptor. (Remove the existing rectangular transition, swap the O-ring, and install the circular transition instead.)



- 2 Connect the OMT Kit to the antenna and secure it with four screws. Verify the existence of the O-ring.
- 3 Mount and tighten the Remote Mount Adapter to the RFU-D-HP OMT ports using the screws supplied with the adapter kit.

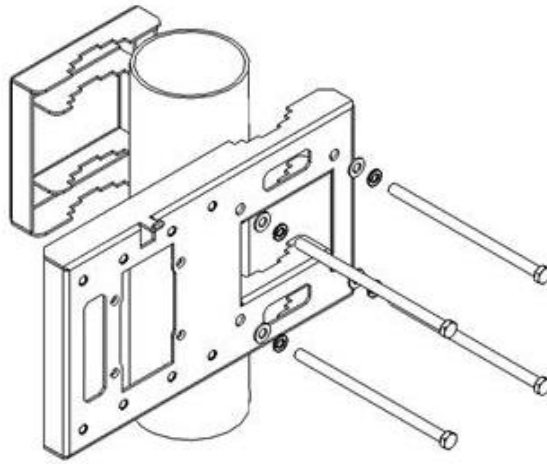


- 4 Mount and tighten the O-ring and the flexible waveguide to the adapter ports using the screws supplied with the flexible waveguide kit.

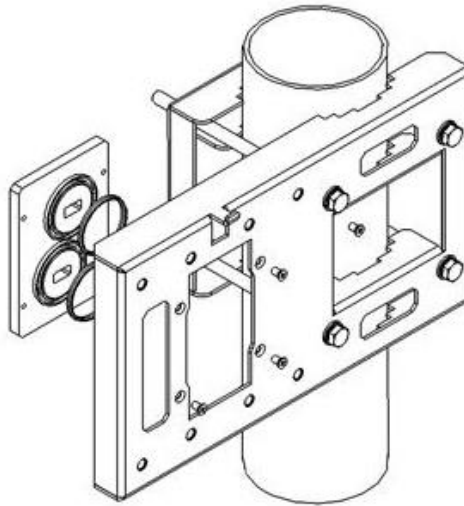


Note:

Verify that the O-rings are correctly mounted between the OMT ports and each flexible waveguide.

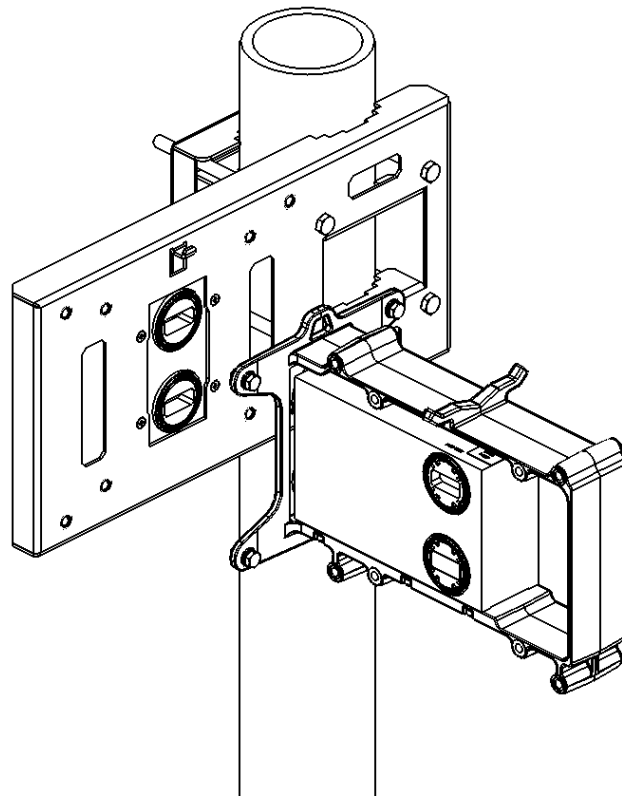


- 5 Mount and tighten the RFU-D-HP DC pole mount to the pole using the four washers and screws supplied with the RFU-D-HP DC pole mount kit. See Steps 0 and 0 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.

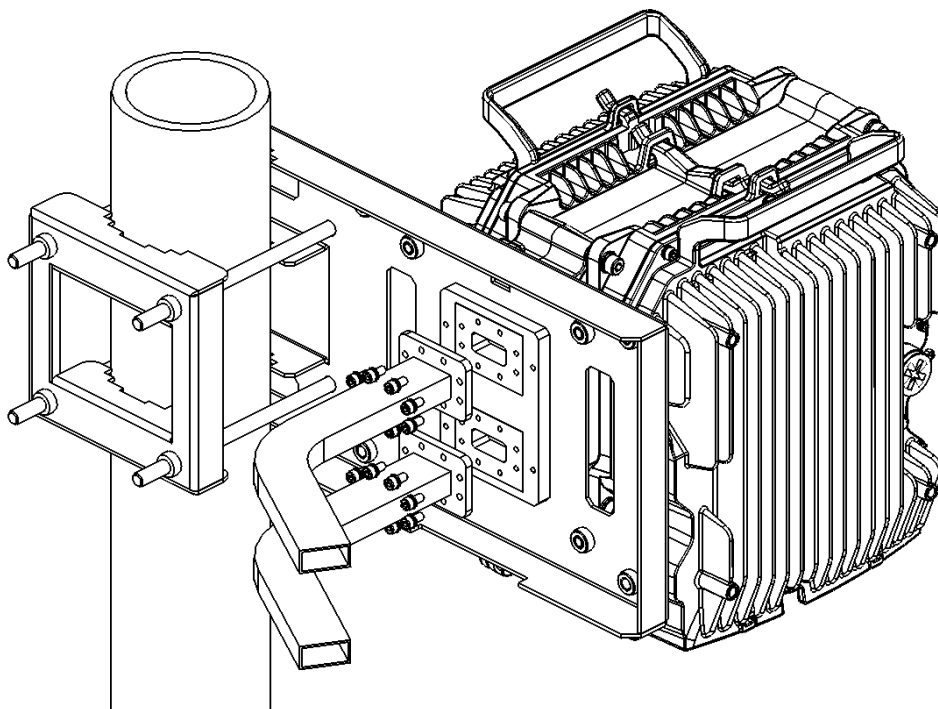


- 6 Mount and tighten the RFU-D-HP Remote Mount Adaptor plate (supplied in RFU-D-HP Adaptor Remote Mount kit) to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Adaptor Remote Mount kit.
- 7 Mount and tighten the RFU-D-HP Radio to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Radio.

- 8 Mount and tighten the RFU-D-HP Dual Coupler to the RFU-D-HP Pole Mount using the four screws and washers that are supplied with the RFU-D-HP Dual Coupler kit. Pay attention that the O-rings are mounted on the RFU-D-HP Remote Mount Adaptor.



- 9 Mount and tighten the RFU-D-HP radios on each side of the RFU-D-HP Dual Coupler using the screws assembled on RFU-D-HP radio. Pay attention that the O-rings are correctly assembled on the radio port of the RFU-D-HP Dual coupler.



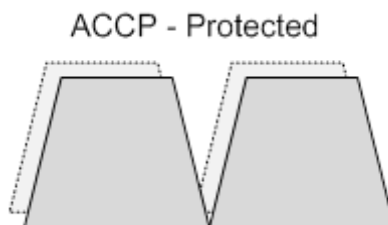
- 10 Connect both Flexible Waveguides and Sealing Gaskets supplied with each Flexible Waveguide Kit to the RFU-D-HP Dual Coupler antenna ports. Tighten the screws and washers supplied with the Flexible Waveguide Kit.

2+2 HSB Single Polarization Direct Mount



Note:

This procedure can also be used for 2 x 1+1 HSB SP HW ready for 2+2 HSB SP configurations.



List of Items

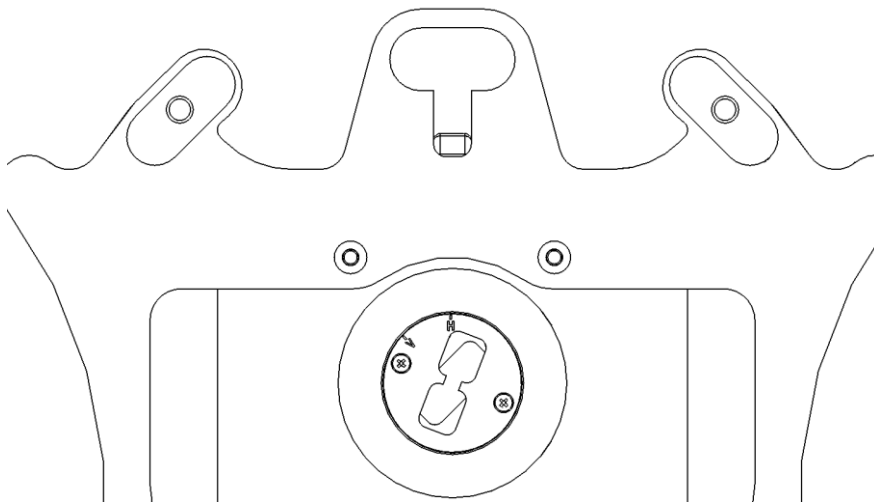
Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO	2	See Section 0,
			<p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability information.</p>
Radio Unit			
2	RFU-D-HP Diplexer Unit	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP SPLITTER KIT	1	FXDH-RM-MD-SPLTR-ff
4	RFU-D-HP DUAL COUPLER KIT	1	DXDH-MD-DUAL-CPLR-ff

Required Tools

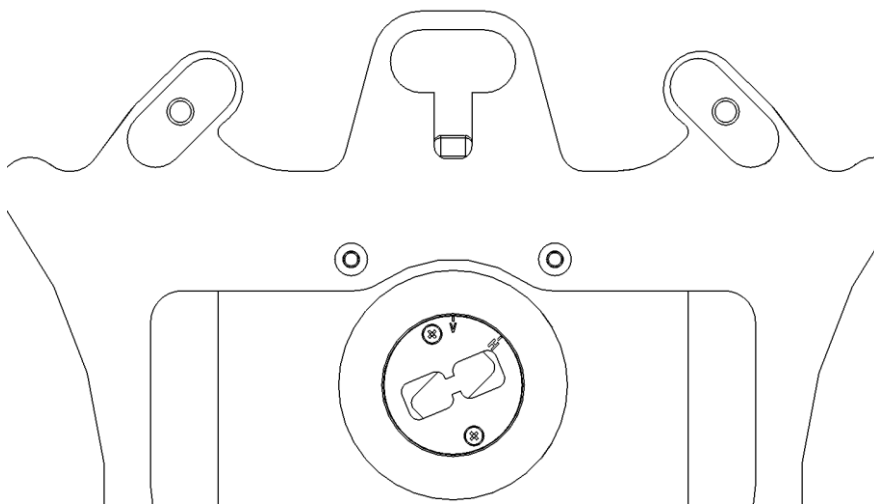
- Metric offset hexagon key set
- Metric wrench key set
- Phillips #1 screwdriver

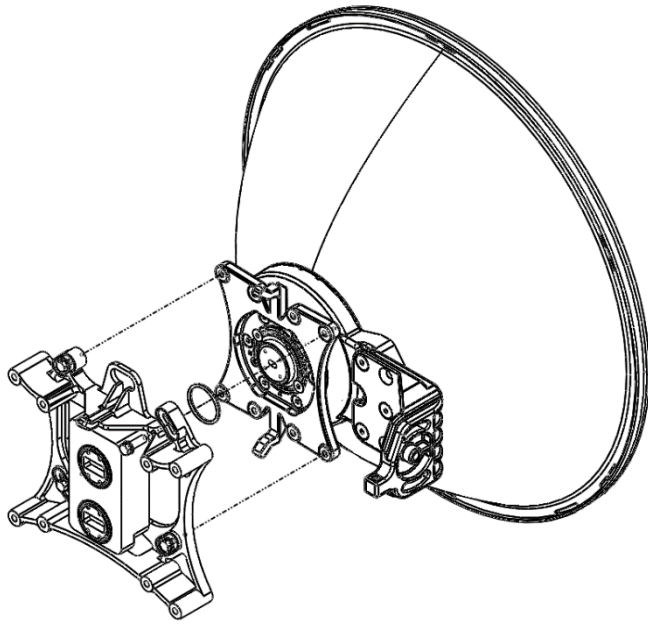
Procedure

- 1 Adjust the twist on the Splitter Kit. Perform one of the procedures below, according to the required polarization (horizontal or vertical).
 - For horizontal polarization, locate the twist with the letter “H” on top.

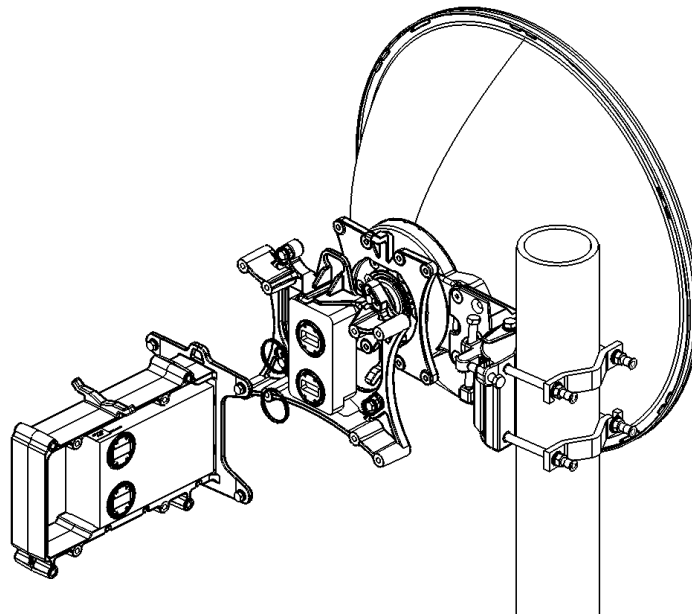


- For vertical polarization, locate the twist with the letter “V” on top.

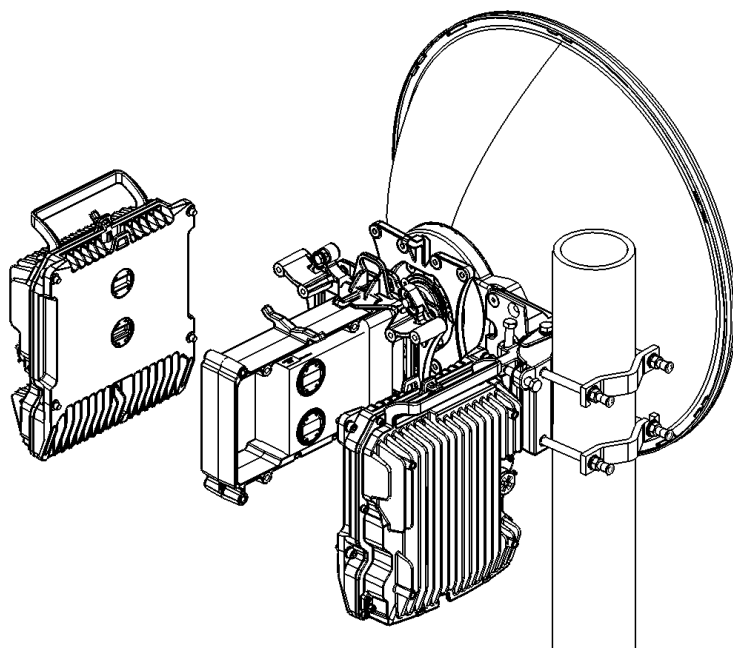




- 2 Mount the Splitter Kit on the antenna using four M8 screws and washers and tighten the screws.



- 3 Connect the RFU-D-HP Dual Coupler Kit to the Splitter Kit using four M8 screws and washers, and tighten the screws.



- 4 Mount and tighten the RFU-D-HP DC radio unit to both sides of the Dual Coupler Kit using the supplied captive screws and washers. Pay attention that the O-rings are correctly mounted on the radio ports of the RFU-D-HP Dual Coupler.
- 5 Connect the protection signaling cable between the management ports of both units.

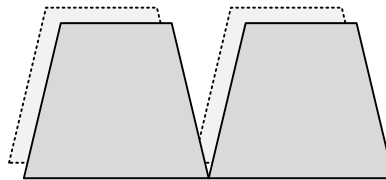
2+2 HSB Single Polarization Remote Mount



Note:

This procedure can also be used for 1+1HSB SP HW ready for 2+2HSB SP configurations.

ACCP - Protected



List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO	2	See Section 0, <div style="display: flex; align-items: center;"> <div> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in</p> </div> </div>
			Radio Unit
2	RFU-D-HP Diplexer Unit	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	Remote Mount Kit	1	RFU-D-HP DC Adaptor Remote Mount Kit, <i>ff</i> GHz
4	RFU-D-HP SPLITTER KIT	1	FXDH-RM-MD-SPLTR- <i>ff</i>
5	RFU-D-HP DUAL COUPLER KIT	1	DXDH-MD-DUAL-CPLR- <i>ff</i>
6	FLEXIBLE WG KIT	2	

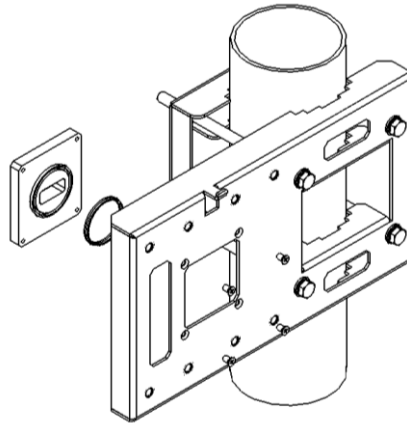
7	RFU-C	2	RFU-C-POLEMOUNT
	POLE		
	MOUNT		
	KIT		

Required Tools

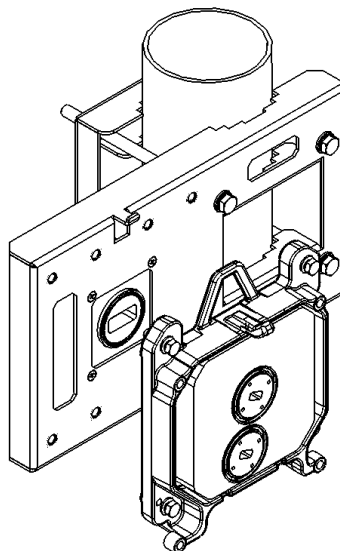
- Metric offset hexagon key set
- Metric wrench key set
- Phillips #1, #2 screwdriver

Procedure

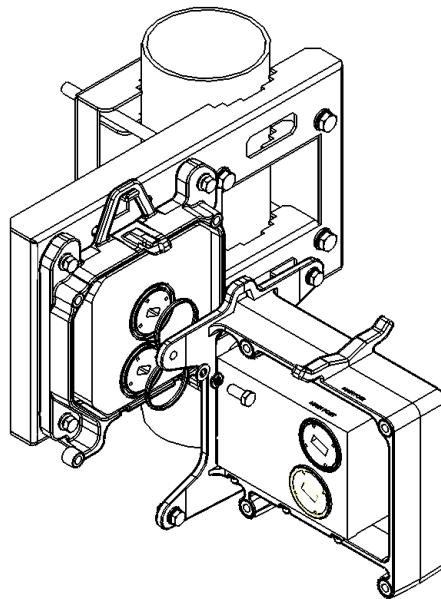
- 1 Mount and tighten the RFU-D-HP Remote Mount Adaptor plate (supplied in the RFU-D-HP Adaptor Remote Mount kit) to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Adaptor Remote Mount kit.



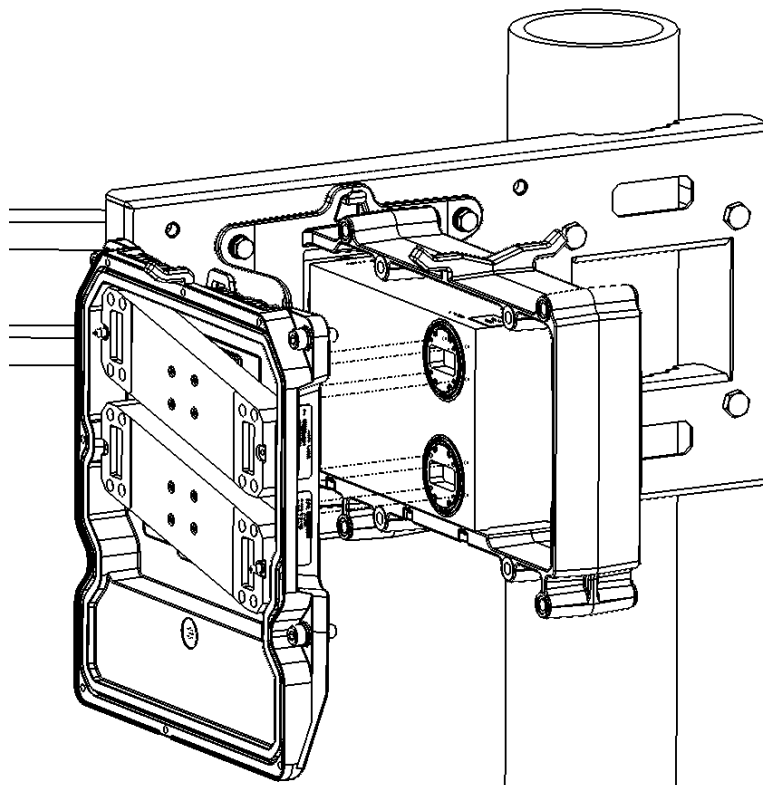
- 2 Mount and tighten the RFU-D-HP Splitter to the RFU-D-HP Pole Mount using the four captive screws and washers that are assembled to the RFU-D-HP Splitter kit.



- 3 Mount and tighten the RFU-D-HP Dual Coupler to the RFU-D-HP Splitter using the four captive screws and washers that are supplied with the RFU-D-HP Dual Coupler kit. Make sure that the O-rings are mounted on the RFU-D-HP Splitter.



- 4 Attach the Diplexer unit to the Dual Coupler using 8 M4 screws provided with the Diplexer kit, as shown below, using 20Nm torque.



Note:

Tighten the screws diagonally. First begin to fasten the upper right screw of the top Diplexer and then the lower left screw of the bottom Diplexer, then fasten the upper left screw of

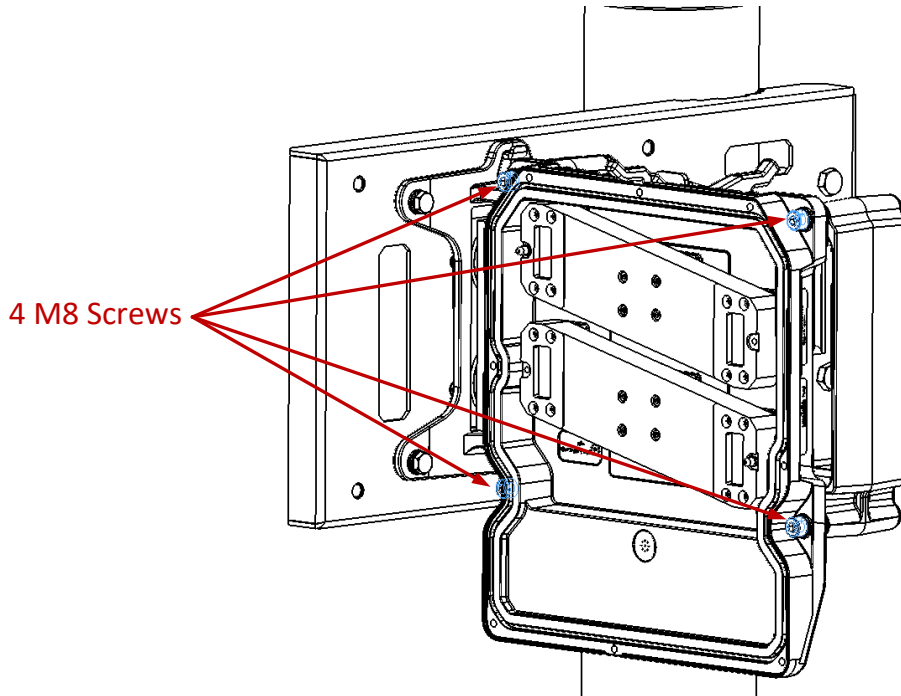
the top Diplexer and then the lower right screw of the bottom Diplexer. Once the outer screws have all been partially tightened, repeat this process in a similar fashion with the central screws. Then proceed to fully tighten all the screws in the same order.



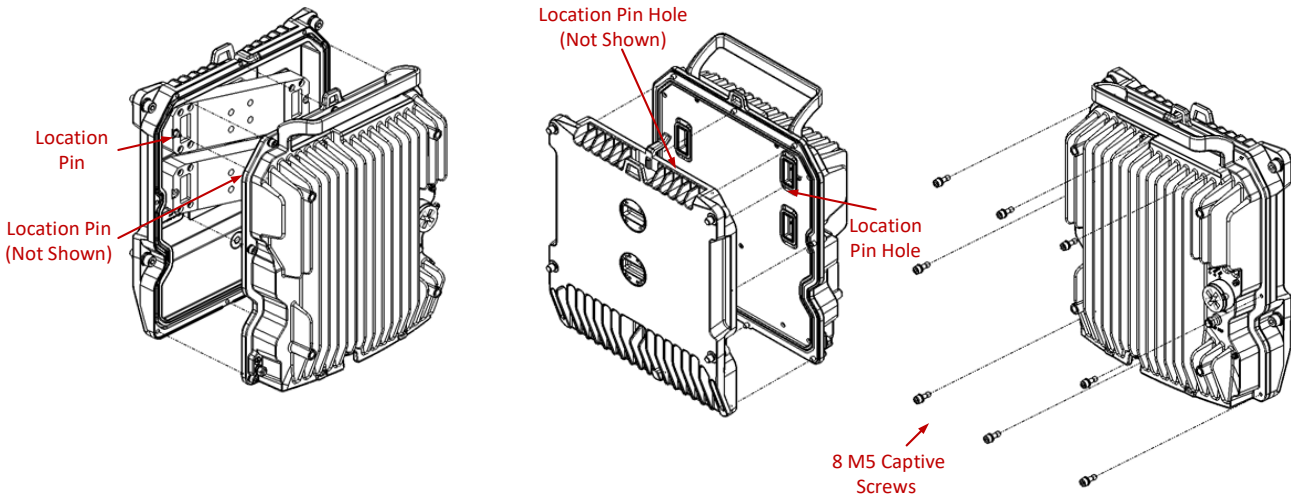
Important:

Verify that the O-rings on the Dual Coupler are properly mounted between the Dual Coupler ports and the Diplexer unit.

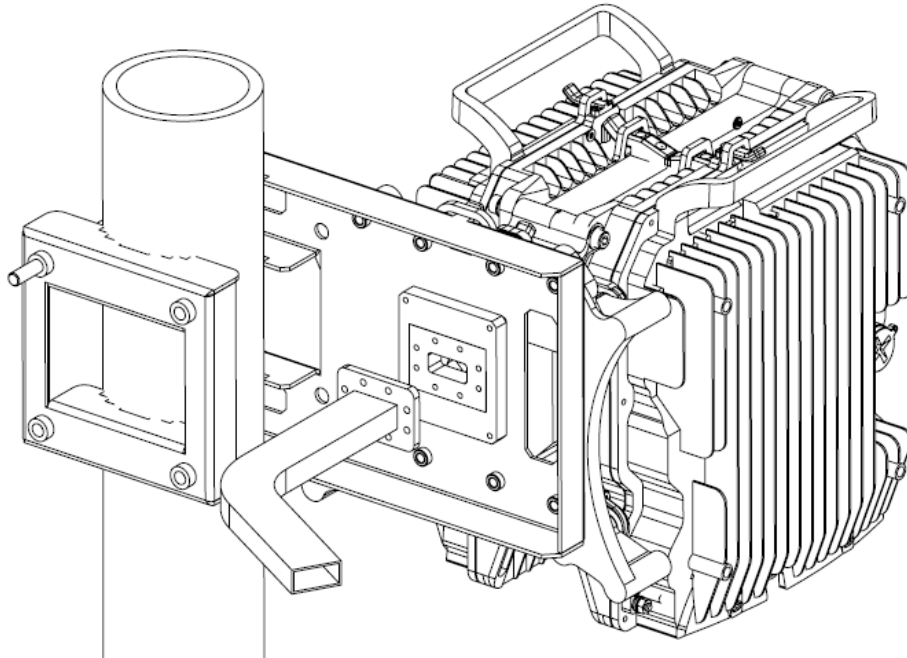
- 5 Secure the edges of the Diplexer unit to the Dual Coupler using the four M8 captive screws and washers supplied with the Diplexer kit, using 20Nm torque. These screws are colored blue in the following picture. Be sure to tighten the screws in the same diagonal manner as in the previous step.



- 6 Attach the Radio unit to the Diplexer unit using the 8 M5 captive screws supplied with the Radio kit. Position the Radio unit on the Diplexer unit so that the two location pins mounted on the TRX ports of the Diplexer unit fit into the corresponding holes in the Radio unit. Perform the fastening in diagonal fashion as in the previous steps. The location pins are located on either the left of the upper TRX port and the right of the lower TRX port or the right of the upper TRX port and the left of the lower TRX port, depending on the frequency.




- 7 Repeat steps 4-6 to attach the second Diplexer unit and the second Radio unit to the other side of the Dual Coupler, Dual Splitter, or Dual Circulator.
- 8 Connect the Flexible Waveguide and Sealing Gasket supplied with the Flexible Waveguide kit to the RFU-C Adaptor plate. Tighten the four screws supplied with the Flexible Waveguide kit.



2+0 BBC Space Diversity Direct Mount

List of Items

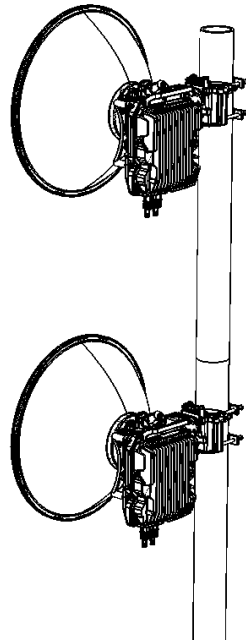
Item	Description	Quantity	Marketing Models
1	RFU-D-HP Radio	2	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Diplexer Unit	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT Kit	2	DXDH-MD-OMT-ff
4	Data Sharing Cable	1	See Section 0
5	Source Sharing Cable	1	See Section 0
6	Circ./Circ. Adaptor	2	Per Antenna Vendor

Required Tools

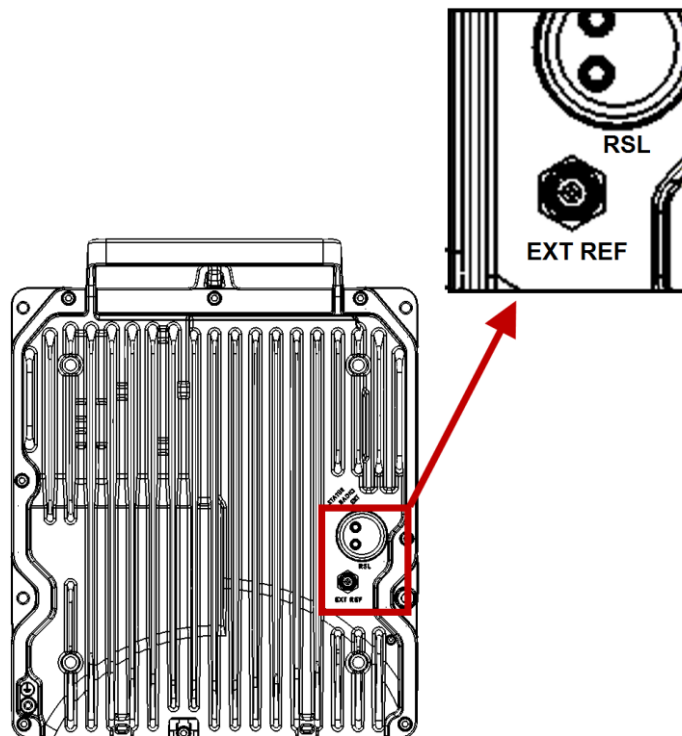
- Metric offset hexagon key set
- Metric wrench key set

Procedure

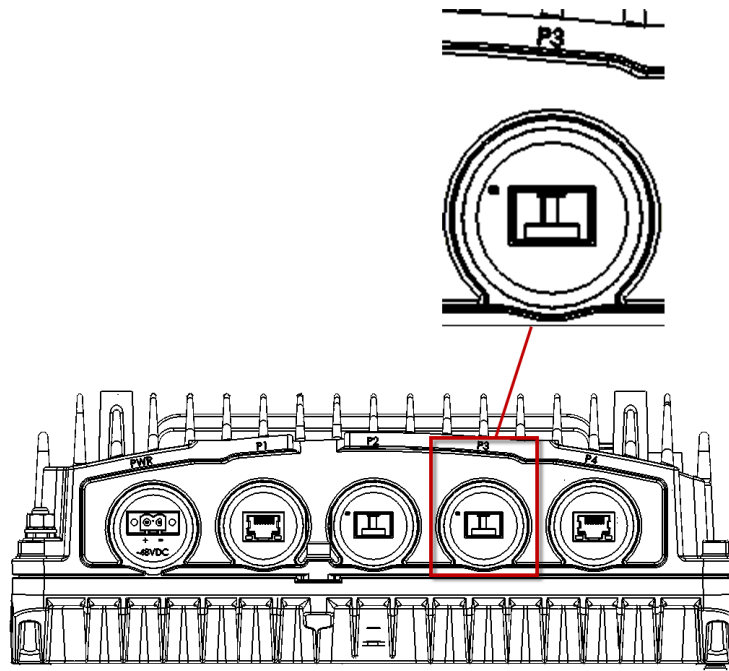
- 1 For instructions on installation of the RFU-D-HP OMT and radios, see *2+0 Dual Polarization Direct Mount* on page 67.



- 2 Connect the source sharing cable between both EXT REF RFU-D-HP radio connectors. The maximum torque for connecting this cable to the radio is 5Lb.in (0.5N.m).




- 3 Connect the data sharing cable between both P3 RFU-D-HP ports.



4+0 BBC Space Diversity Direct Mount

List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radio	4	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Diplexer Unit	4	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT Kit	2	DXDH-MD-OMT-ff
4	RFU-D-HP Dual Splitter or Dual Circulator	2	DXDH-MD-DUAL-SPLTR-ff DXDH-MD-DUAL-CIRC-ff
5	Data Sharing Cable	2	See Section 0
6	Source Sharing Cable	2	See Section 0
7	Circ./Circ. Adaptor	2	Per Antenna Vendor

Required Tools

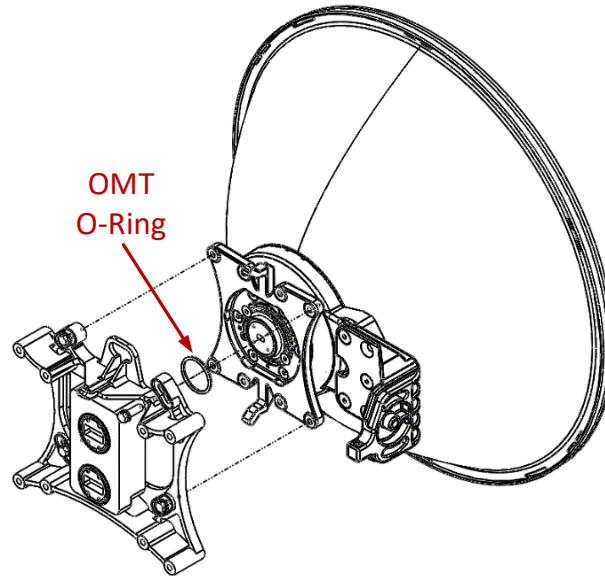
- Metric offset hexagon key set
- Metric wrench key set

Procedure

- 1 For the Master RFU units, mount an OMT to the antenna and secure it with four screws.



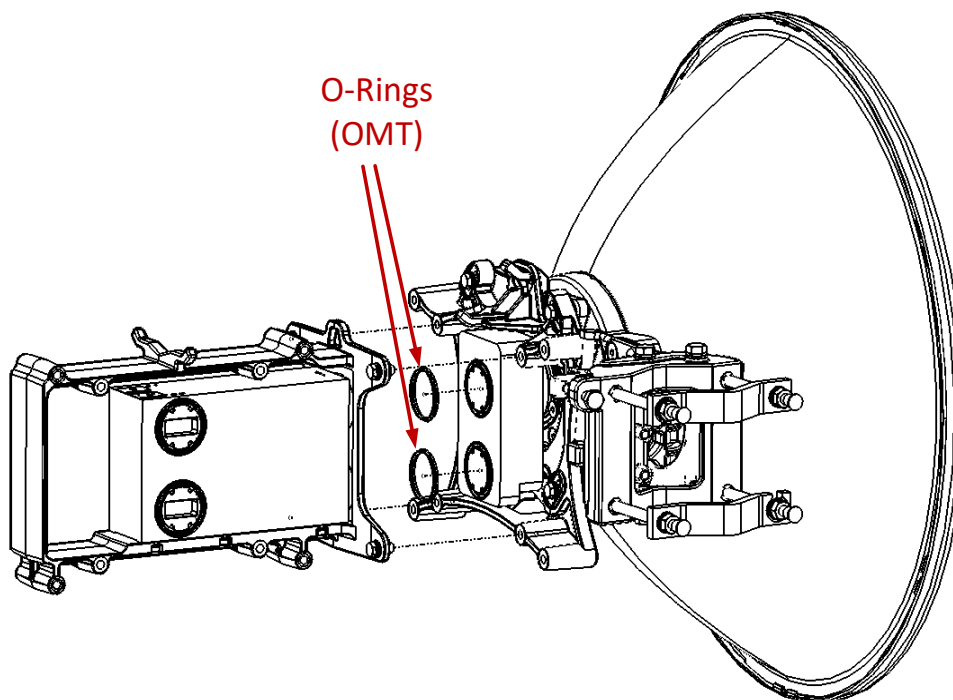
Important: Verify that the O-ring is properly mounted between the antenna transition and the OMT.



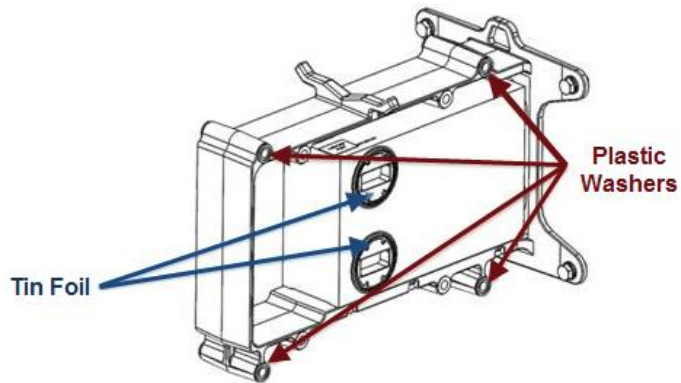
- 2 Connect the RFU-D-HP Dual Splitter or Dual Circulator kit to the OMT using four M8 screws and washers, supplied in the Dual Coupler, and tighten the screws.



Important: Verify that the O-rings on the OMT are properly mounted between the OMT ports and the Dual Splitter/Dual Circulator.



- 3 Make sure the following items are attached to the Dual Splitter or Dual Circulator before attaching the Diplexer units:
- Four plastic washers on either side of the Dual Splitter or Dual Circulator on the surface around the screw threads for the Diplexer unit.
 - Smooth tin foil sheets on the side facing the waveguide interfaces. Make sure they are properly placed and not bent or wrinkled. It is also important to ensure that the tin foil sheets do not get wrinkled or bent during installation.

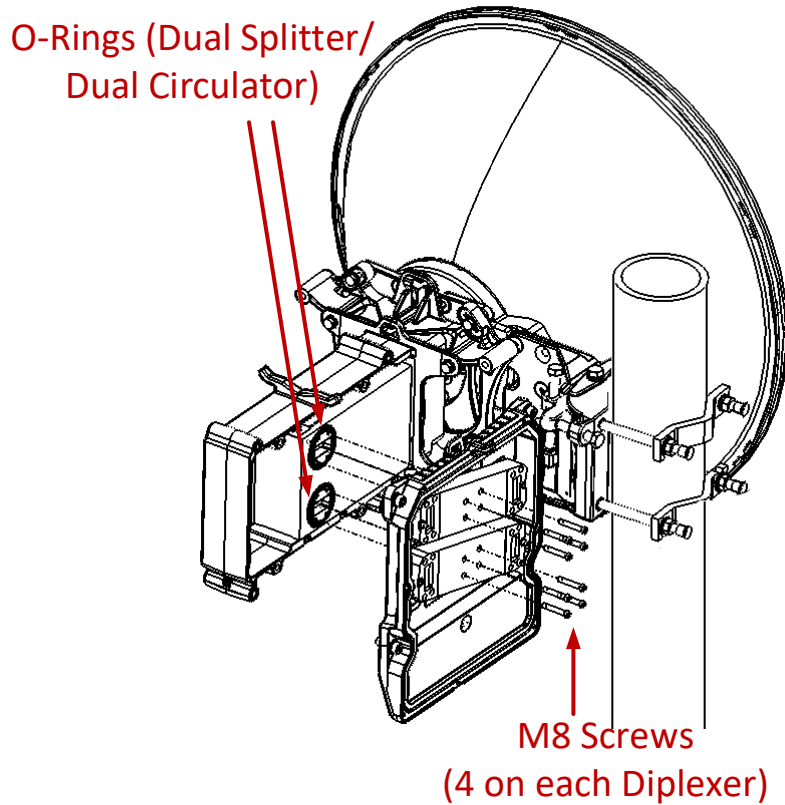


- 4 Attach the Diplexer unit to the Dual Splitter or Dual Circulator using 8 M4 screws provided with the Diplexer kit, as shown below, using 20Nm torque.



Important:

Verify that the O-rings on the Dual Splitter or Dual Circulator are properly mounted between the Dual Splitter or Dual Circulator ports and the Diplexer unit.



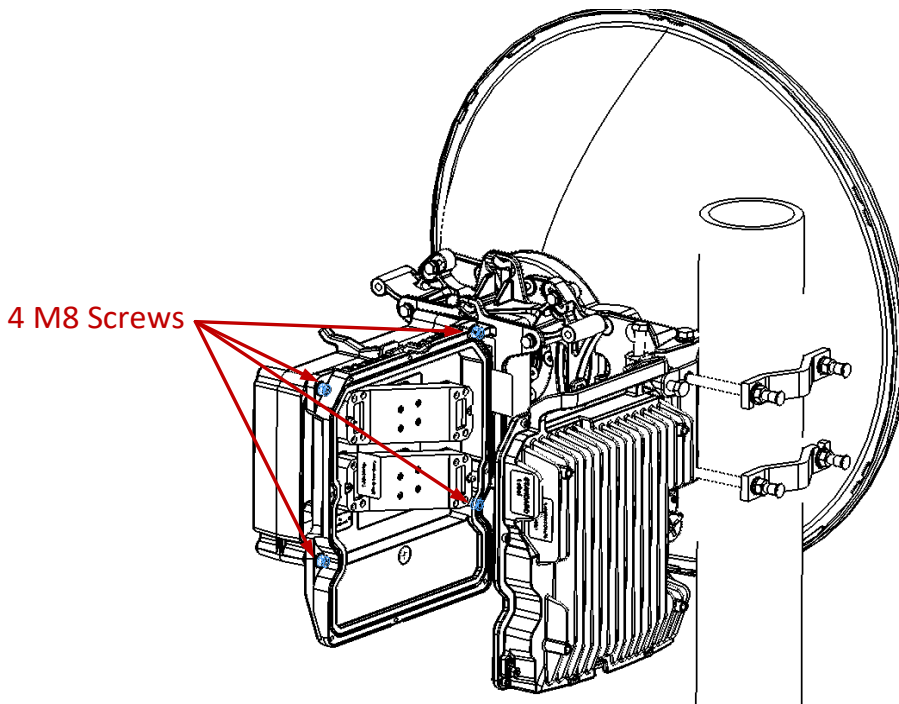


Note:

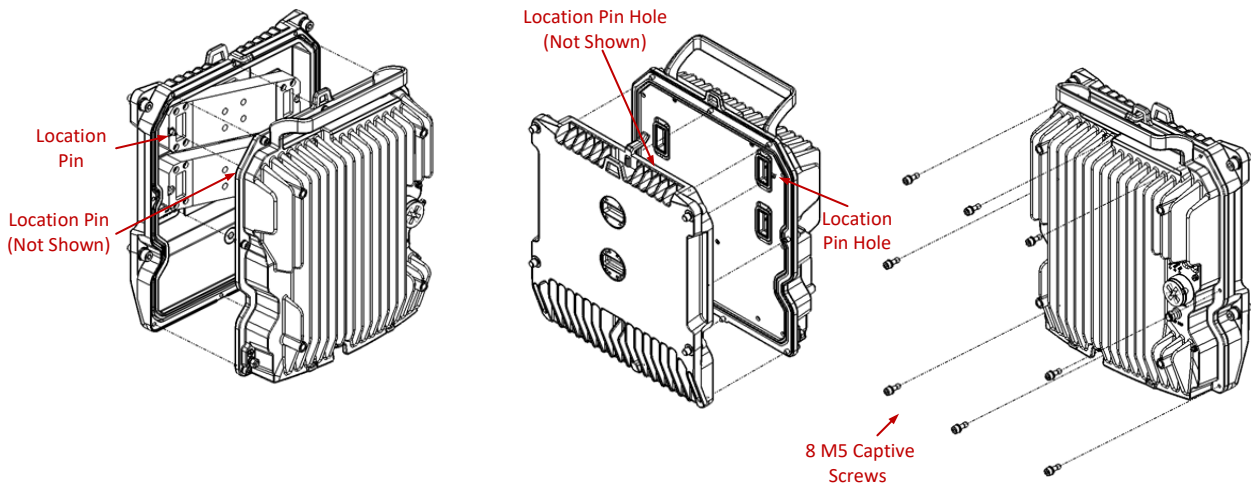
The screws should be tightened diagonally. Fasten the upper right screw of the top Diplexer and then the lower left screw of the bottom Diplexer, then fasten the upper left screw of the top Diplexer and then the lower right screw of the bottom Diplexer. Once the outer screws have all been partially tightened, repeat this process in a similar fashion with the central screws. Then proceed to fully tighten all the screws in the same order.



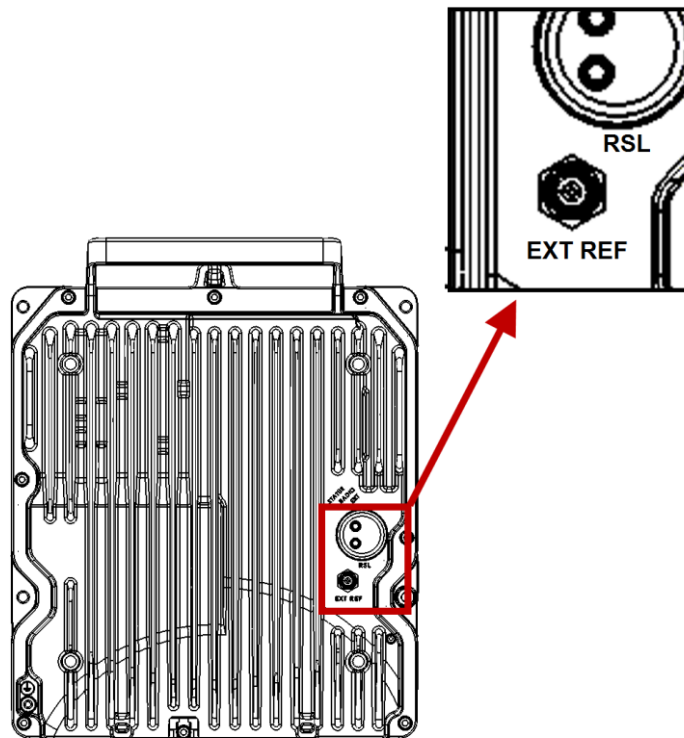
- 5 Secure the edges of the Diplexer unit to the Dual Splitter or Dual Circulator using the four M8 captive screws and washers supplied with the Diplexer kit, using 20Nm torque. These screws are colored blue in the following picture. Be sure to tighten the screws in the same diagonal manner as in the previous step.



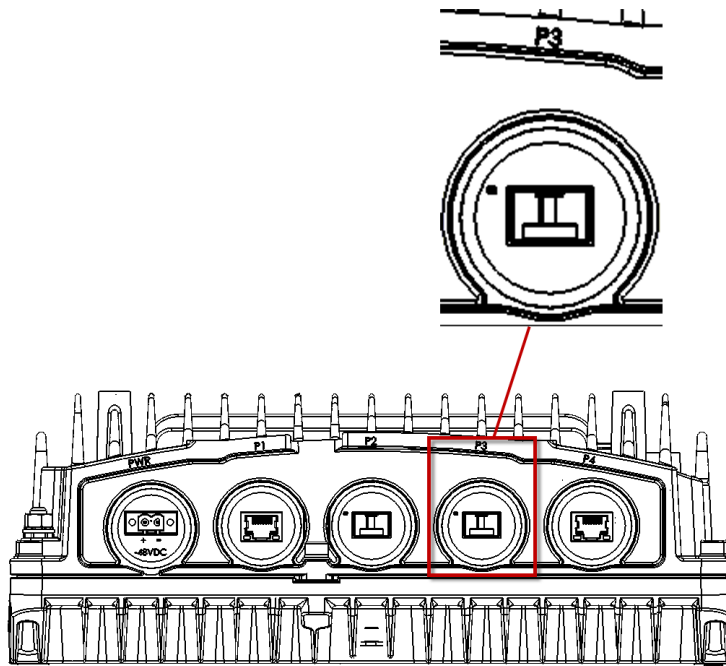
- 6 Attach the Radio unit to the Diplexer unit using the 8 M5 captive screws supplied with the Radio kit. Position the Radio unit on the Diplexer unit so that the two location pins mounted on the TRX ports of the Diplexer unit fit into the corresponding holes in the Radio unit. Perform the fastening in diagonal fashion as in the previous steps. The location pins are located on either the left of the upper TRX port and the right of the lower TRX port or the right of the upper TRX port and the left of the lower TRX port, depending on the frequency.



- 7 Repeat steps 4-6 to attach the second Diplexer unit and the second Radio unit to the other side of the Dual Splitter or Dual Circulator.
- 8 Repeat steps 1-7 to attach the Slave RFUs to the Diversity antenna.
- 9 For each Master-Slave RFU pair:
 - a) Connect the source sharing cable between both EXT REF RFU-D-HP radio connectors. The maximum torque for connecting this cable to the radio is 5Lb.in (0.5N.m).




b) Connect the data sharing cable between both P3 RFU-D-HP ports.



4+0 Single/Dual Polarization, Direct Mount

List of Items

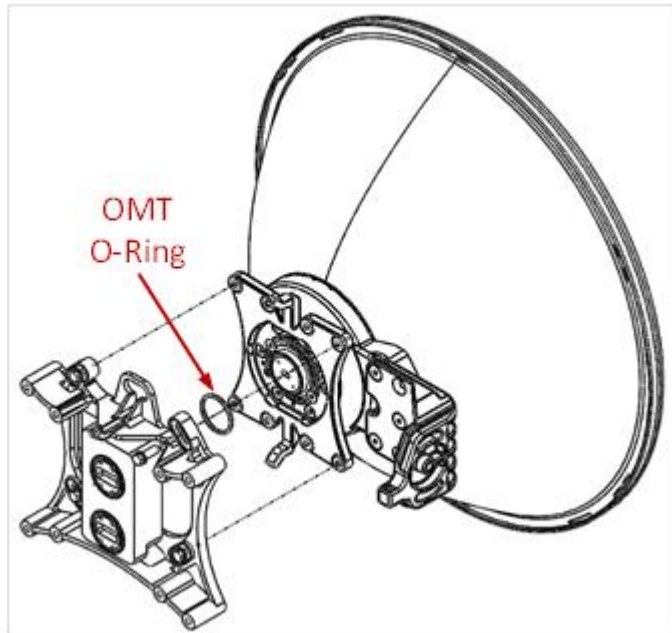
Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radios	2	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability information.</p>
Radio Unit			
2	RFU-D-HP Diplexer Units	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP Dual Coupler or Dual Splitter	1	DXDH-MD-DUAL-CPLR- <i>ff</i> DXDH-MD-DUAL-SPLTR- <i>ff</i>
4	RFU-D-HP OMT/Splitter Kit	1	DXDH-MD-OMT- <i>ff</i> FXDH-RM-MD-SPLTR- <i>ff</i>

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

Procedure

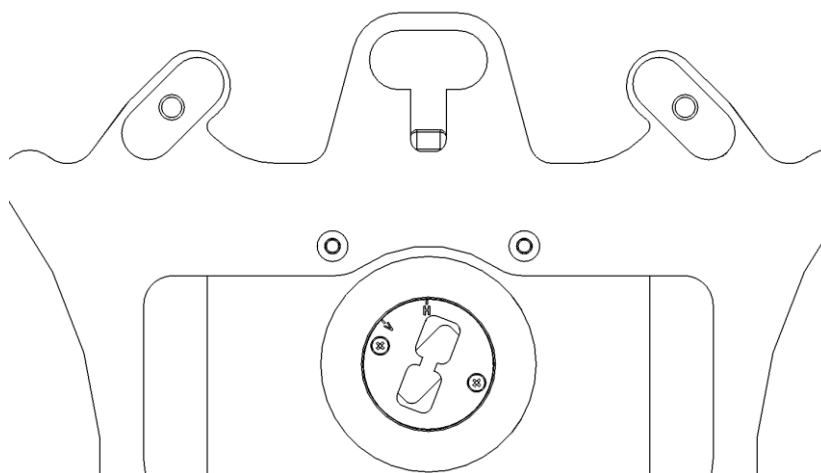
- 1 Mount the OMT (for dual polarization) or Splitter (for single polarization) to the antenna and secure it with four screws.



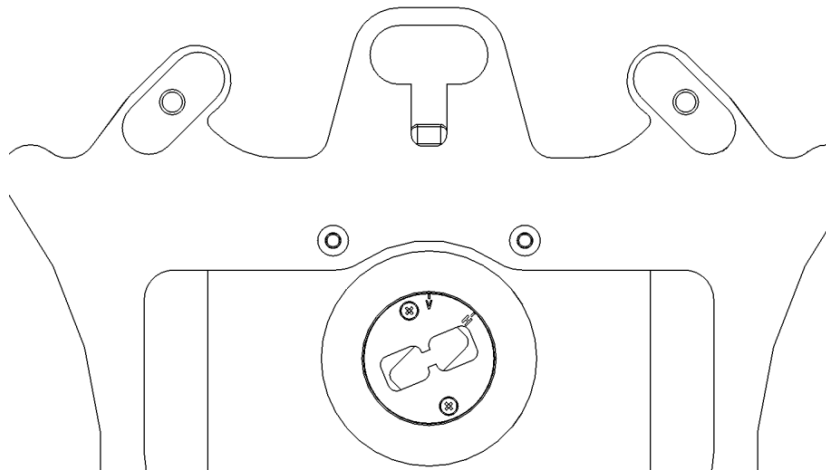
Note:

Verify that the O-ring is properly mounted between the antenna transition and the OMT/Splitter.

- 2 If you are using a Splitter, adjust the twist on the Splitter Kit. Perform one of the following steps, according to the required polarization (horizontal or vertical).
 - For horizontal polarization, locate the twist with the letter “H” on top.



- For vertical polarization, locate the twist with the letter “V” on top.

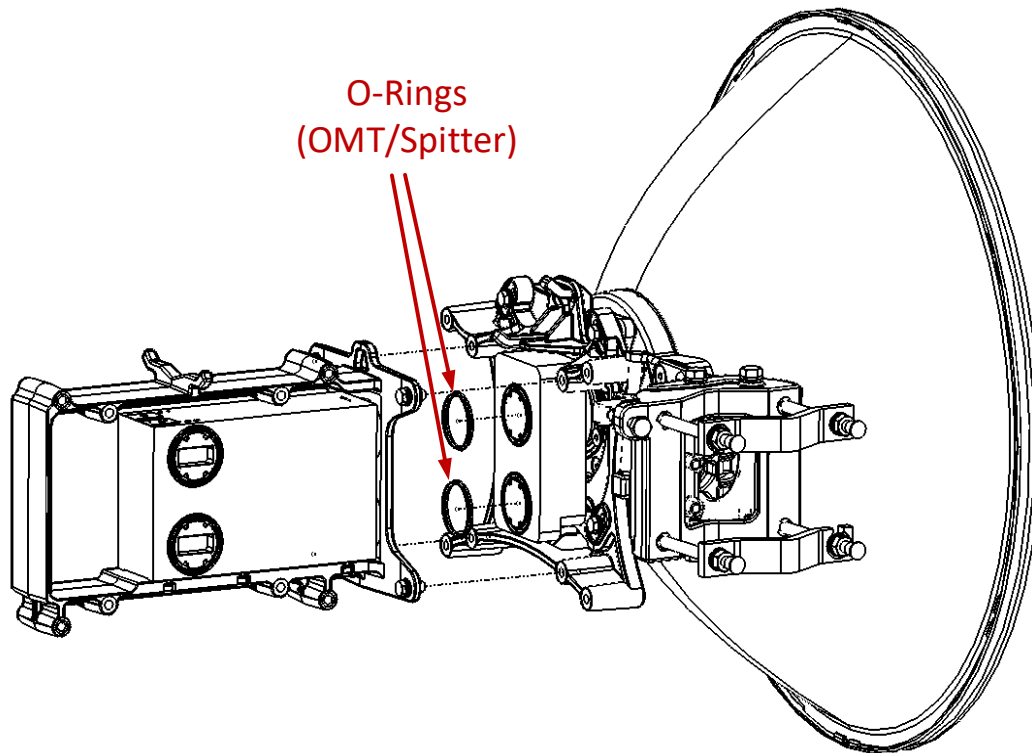


- 3 Connect the RFU-D-HP Dual Coupler or Dual Splitter kit to the OMT/Splitter using four M8 screws and washers, supplied in the Dual Coupler, and tighten the screws.

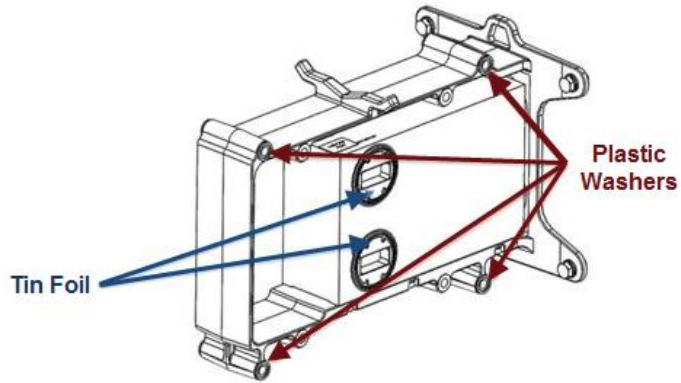


Note:

Verify that the O-rings on the OMT or Splitter are properly mounted between the OMT/Splitter ports and the Dual Coupler/Dual Splitter.



- 4 Make sure the following items are attached to the Dual Coupler or Splitter before attaching the Diplexer units:
- Four plastic washers on either side of the Dual Coupler or Splitter on the surface around the screw threads for the Diplexer unit.
 - Smooth tin foil sheets on the side facing the waveguide interfaces. Make sure they are properly placed and not bent or wrinkled. It is also important to ensure that the tin foil sheets do not get wrinkled or bent during installation.

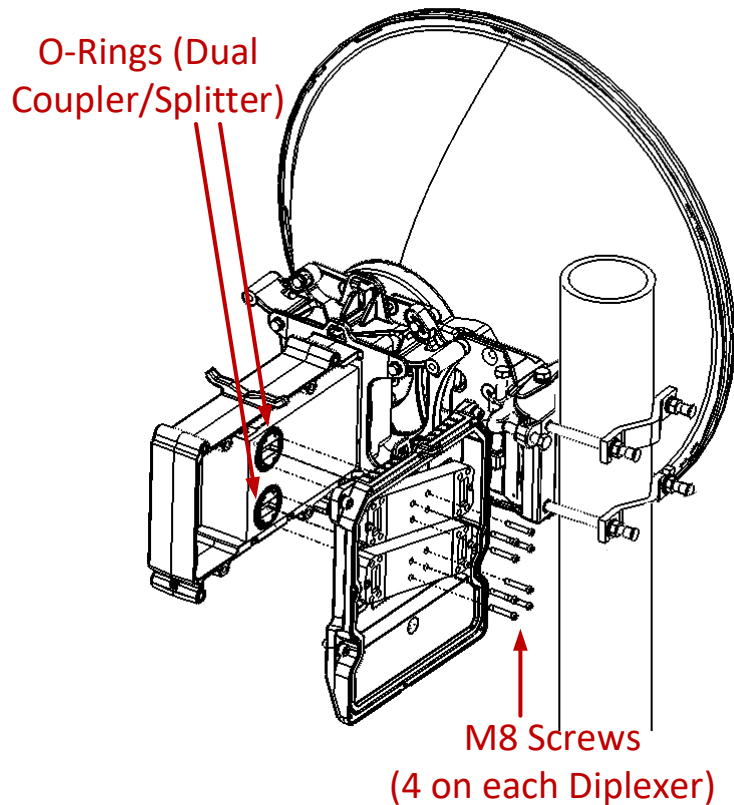


- 5 Attach the Diplexer unit to the Dual Coupler or Splitter using 8 M4 screws provided with the Diplexer kit, as shown below, using 20Nm torque.



Note:

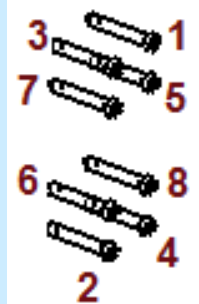
Verify that the O-rings on the Dual Coupler or Splitter are properly mounted between the Dual Coupler or Splitter ports and the Diplexer unit.



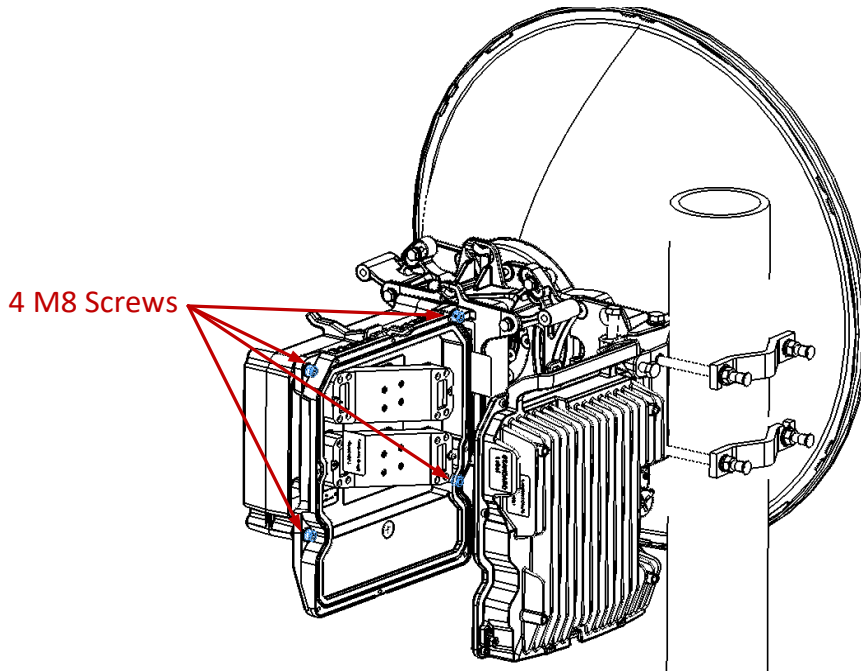


Note:

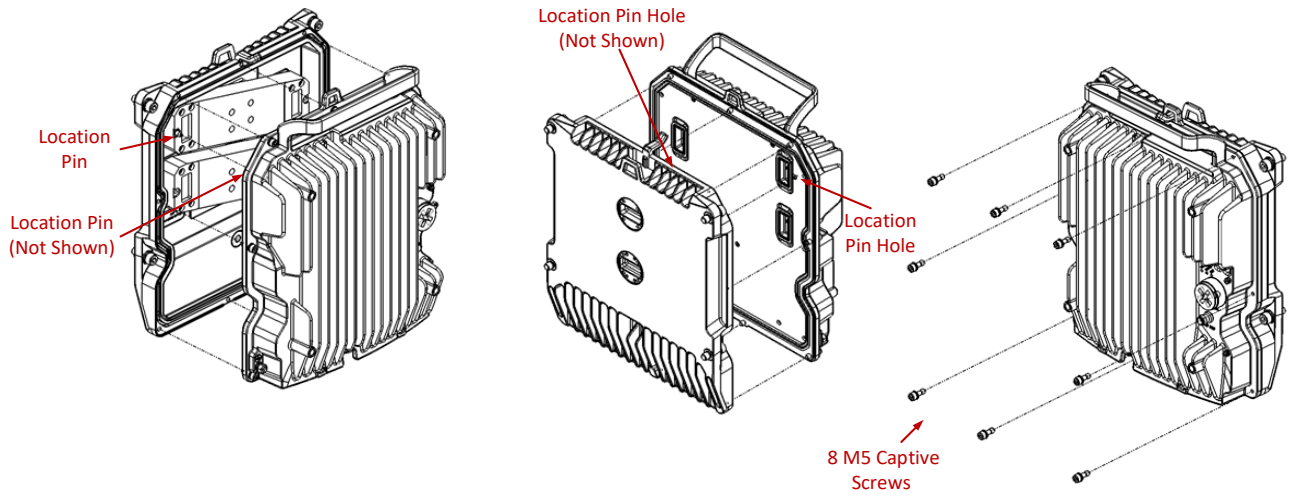
The screws should be tightened diagonally. Fasten the upper right screw of the top Diplexer and then the lower left screw of the bottom Diplexer, then fasten the upper left screw of the top Diplexer and then the lower right screw of the bottom Diplexer. Once the outer screws have all been partially tightened (torque ??), repeat this process in a similar fashion with the central screws. Then proceed to fully tighten all the screws in the same order.



- Secure the edges of the Diplexer unit to the Dual Coupler or Splitter using the four M8 captive screws and washers supplied with the Diplexer kit, using 20Nm torque. These screws are colored blue in the following picture. Be sure to tighten the screws in the same diagonal manner as in the previous step.




- Attach the Radio unit to the Diplexer unit using the 8 M5 captive screws supplied with the Radio kit. Position the Radio unit on the Diplexer unit so that the two location pins mounted on the TRX ports of the Diplexer unit fit into the corresponding holes in the Radio unit. Perform the fastening in diagonal fashion as in the previous steps. The location pins are located on either the left of the upper TRX port and the right of the lower TRX port or the right of the upper TRX port and the left of the lower TRX port, depending on the frequency.



- 8 Repeat steps 5-7 to attach the second Diplexer unit and the second Radio unit to the other side of the Dual Coupler, Dual Splitter, or Dual Circulator.

4+0 Dual Polarization, Remote Mount

List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Radios	2	See Section 0,  Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability.
2	RFU-D-HP Diplexer Units	2	See Section Chapter 0, <i>Diplexer Unit</i>
3	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
4	Flexible Waveguide Kit	2	
5	RFU-D-HP Dual Circulator/Splitter	1	DXDH-MD-DUAL-CIRC-ff DXDH-MD-DUAL-SPLTR-ff
6	Adaptor Remote Mount Kit	1	DXDH-RM-MOUNT-ADPT-ff

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

Common Installation

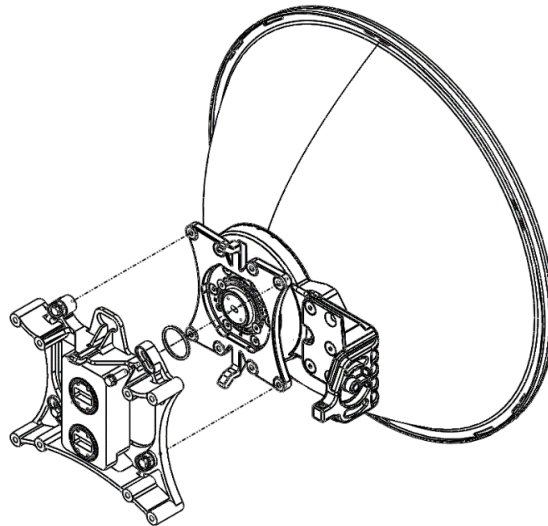
Procedure

- 1 Connect the OMT kit to the antenna and secure it with four screws.

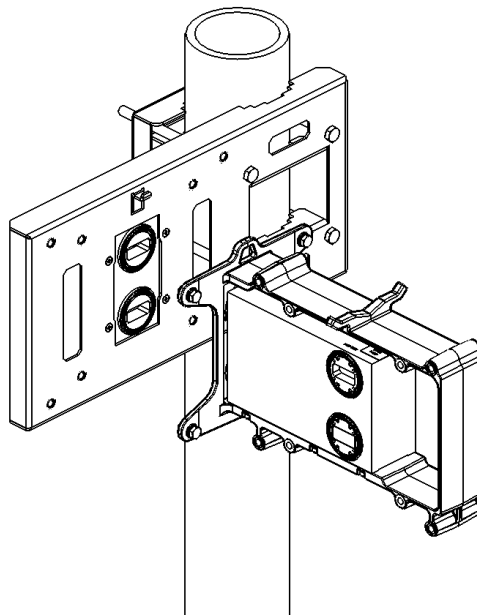


Note:

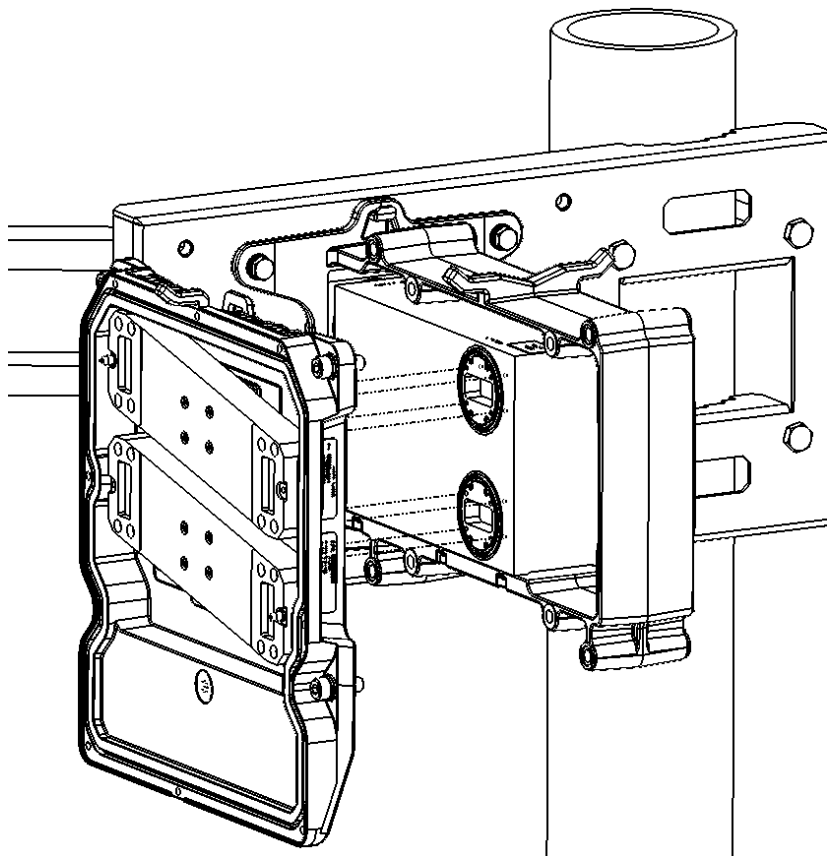
Verify that the O-ring is properly mounted between the antenna transition and the OMT.



- 2 Mount and tighten the RFU-D-HP Remote Mount Adaptor plate (supplied in the RFU-D-HP Adaptor Remote Mount kit) to the RFU-D-HP Pole Mount using the four flat screws supplied with the RFU-D-HP Adaptor Remote Mount kit. See Steps 0 and 0 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.
- 3 Mount and tighten the RFU-D-HP Dual Circulator/Splitter to the RFU-D-HP Pole Mount using the four screws and washers that are supplied with the RFU-D-HP Dual Circulator/Splitter kit. Make sure that the O-rings are mounted on the RFU-D-HP Remote Mount Adaptor.



- 4 Attach the Diplexer unit to the Dual Circulator/Splitter using 8 M4 screws provided with the Diplexer kit, as shown below, using 20Nm torque.



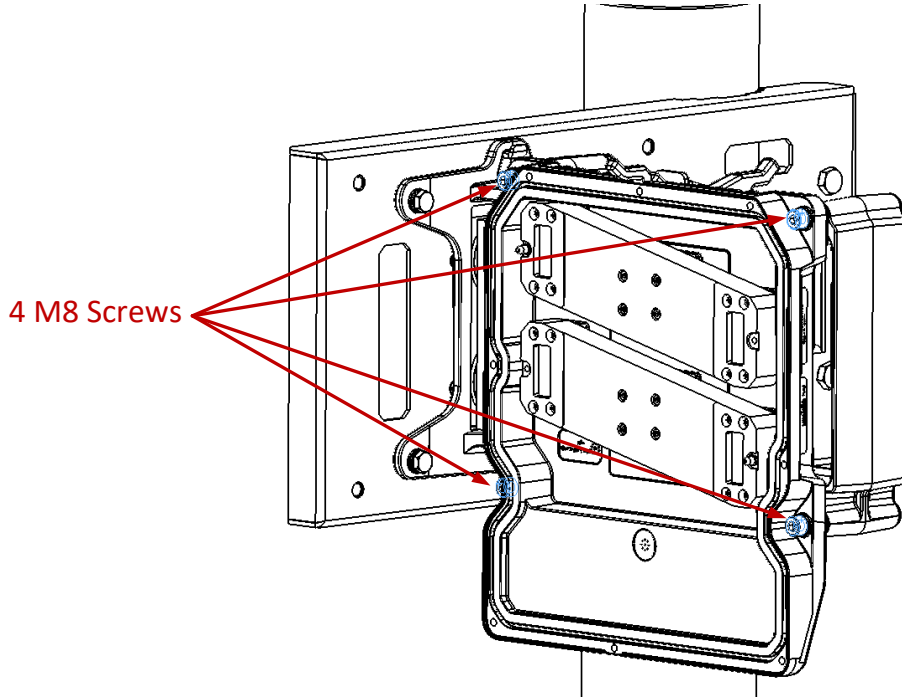
Note:

Tighten the screws diagonally. First begin to fasten the upper right screw of the top Diplexer and then the lower left screw of the bottom Diplexer, then fasten the upper left screw of the top Diplexer and then the lower right screw of the bottom Diplexer. Once the outer screws have all been partially tightened, repeat this process in a similar fashion with the central screws. Then proceed to fully tighten all the screws in the same order.

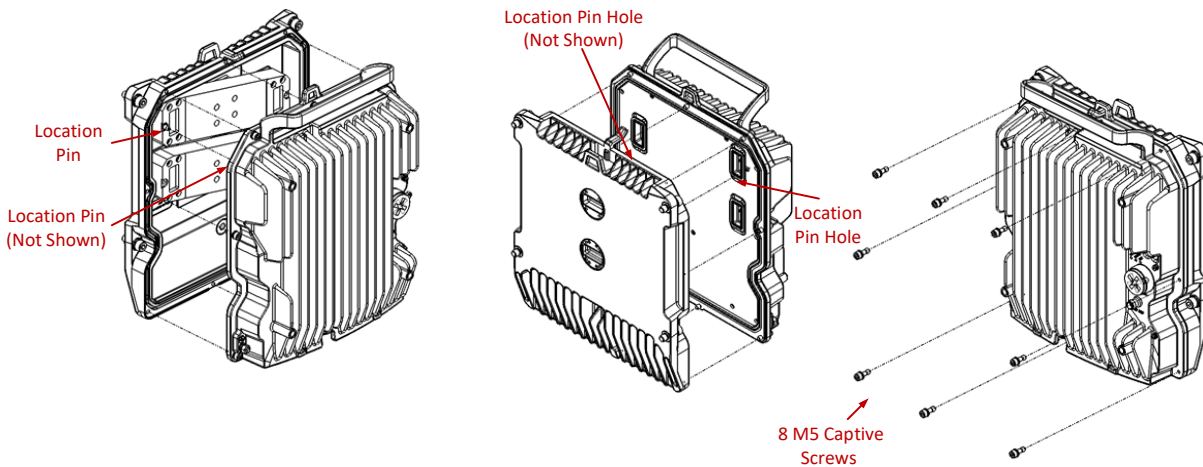


Important: Verify that the O-rings on the Dual Circulator/Splitter are properly mounted between the Dual Circulator/Splitter ports and the Diplexer unit.

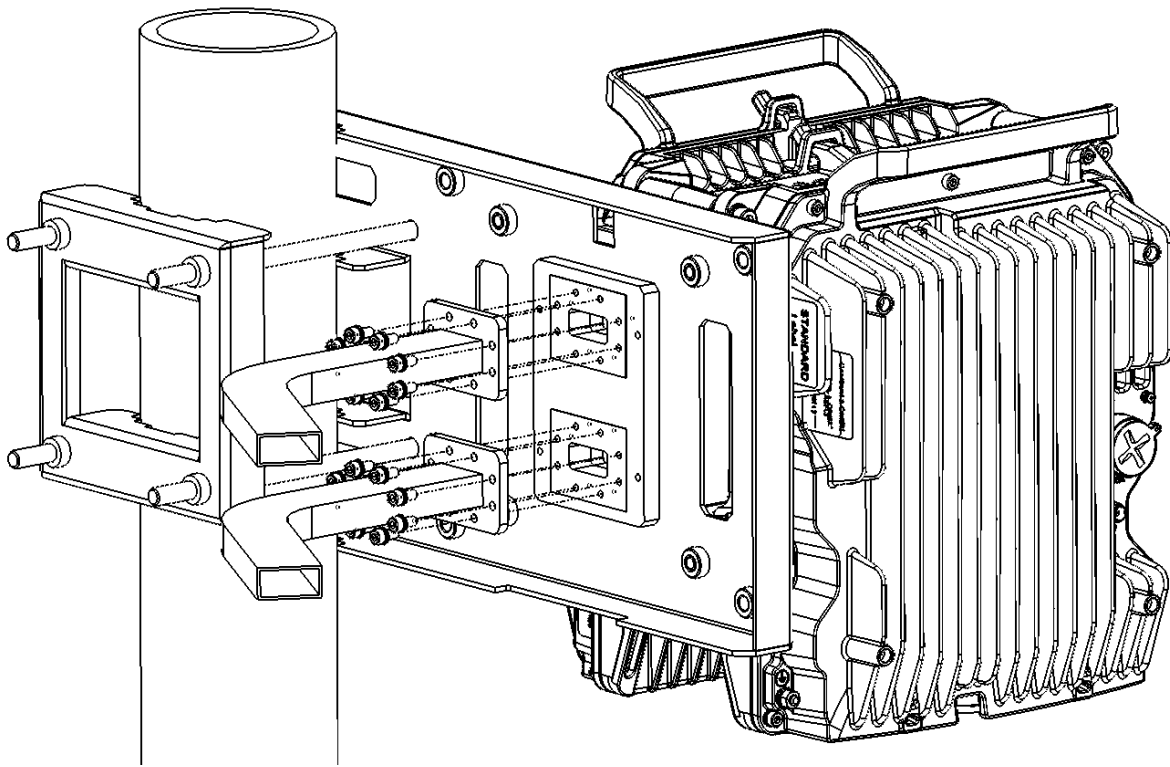
- 5 Secure the edges of the Diplexer unit to the Dual Circulator/Splitter using the four M8 captive screws and washers supplied with the Diplexer kit, using 20Nm torque. These screws are colored blue in the following picture. Be sure to tighten the screws in the same diagonal manner as in the previous step.



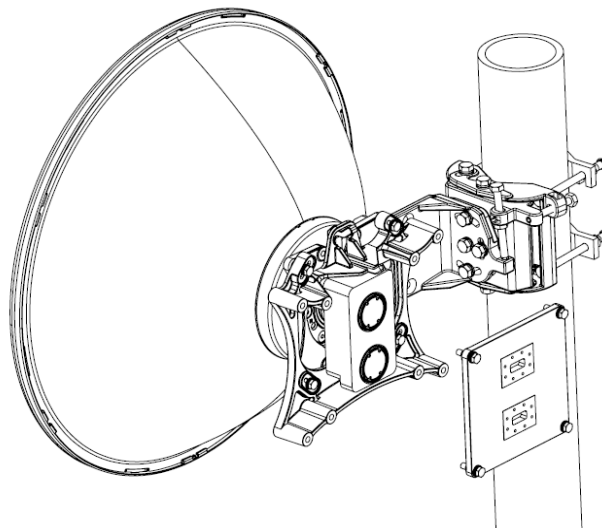
- 6 Attach the Radio unit to the Diplexer unit using the 8 M5 captive screws supplied with the Radio kit. Position the Radio unit on the Diplexer unit so that the two location pins mounted on the TRX ports of the Diplexer unit fit into the corresponding holes in the Radio unit. Perform the fastening in diagonal fashion as in the previous steps. The location pins are located on either the left of the upper TRX port and the right of the lower TRX port or the right of the upper TRX port and the left of the lower TRX port, depending on the frequency.



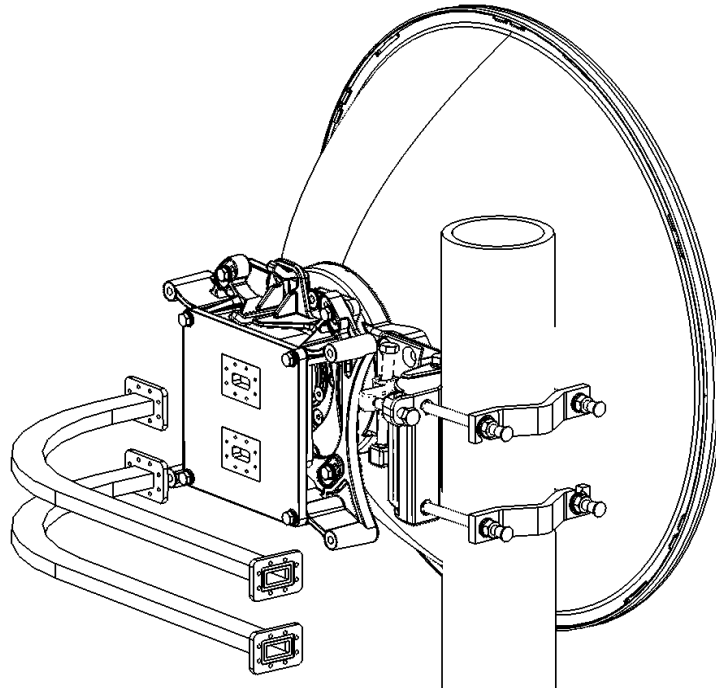
- 7 Repeat steps 4-6 to attach the second Diplexer unit and the second Radio unit to the other side of the Dual Circulator/Splitter.
- 8 Connect both Flexible Waveguides and Sealing Gaskets supplied with each Flexible Waveguide Kit to the antenna ports on the Remote Mount Adaptor. Tighten the screws and washers supplied with the Flexible Waveguide Kit.



- 9 Attach the OMT Remote Mount Adapter to the OMT using the screws supplied with the OMT Remote Mount Adapter kit.



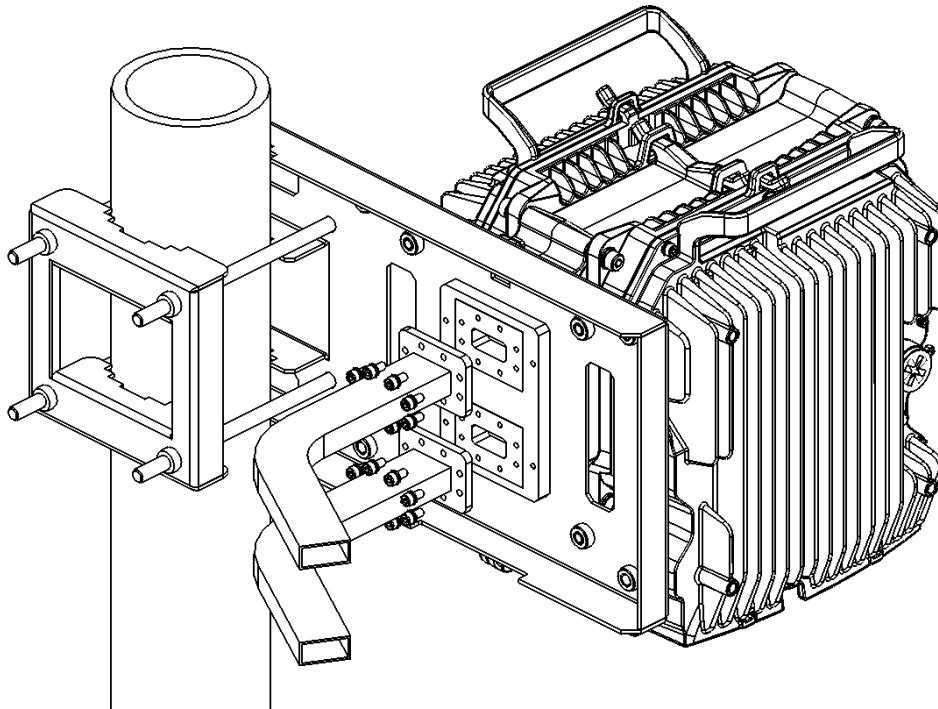
- 10 Connect both Flexible Waveguides and Sealing Gaskets supplied with each Flexible Waveguide Kit to the OMT Remote Mount Adaptor using the screws supplied with the Flexible Waveguide kits.



4+0 with Dual Circulator Remote Mount


The following example illustrates a typical configuration, assuming that:

- The regulation specifies a channelization of 8 consecutive 28/38MHz channels (1-8 ch).
- The actual channels in use are channels 1,5.



Dual Circulator Multi-Carrier Kit Installation

List of Items

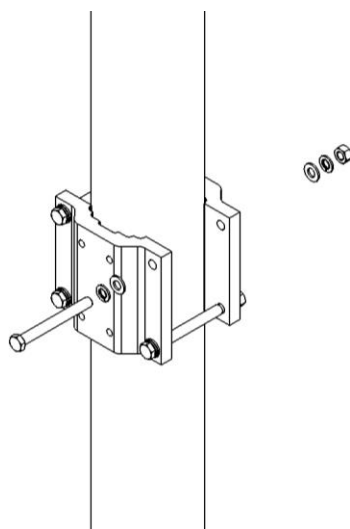
Item	Description	Quantity	Marketing Model
1	RFU-D-HP RADIO	4	See Section 0, <div style="display: flex; align-items: center;">  <div style="background-color: #e0f0ff; padding: 5px;"> <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Diplexer Units	4	See Section Chapter 0, <i>Diplexer Unit</i>
3	Dual Circulator	2	DXDH-MD-DUAL-CIRC-ff

Required Tools

- Metric offset hexagon key set
- Metric wrench key set

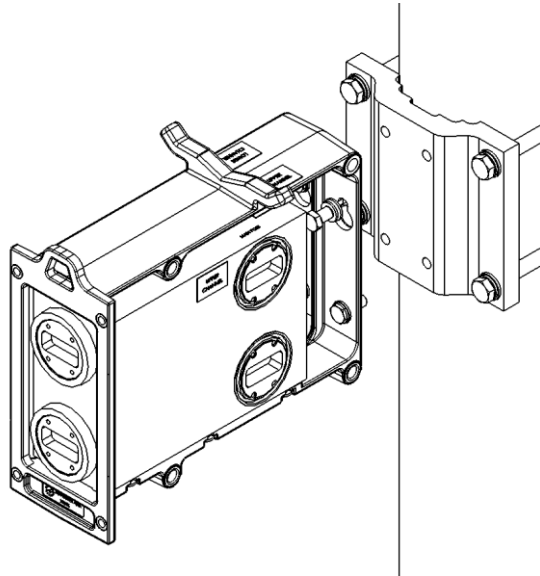
Procedure

- 1 Mount and tighten the pillar adapter brackets to pole (supplied in RFU-D-HP Adaptor Remote Mount kit). Tighten the four M10 Hex screws and washers supplied within the kit.



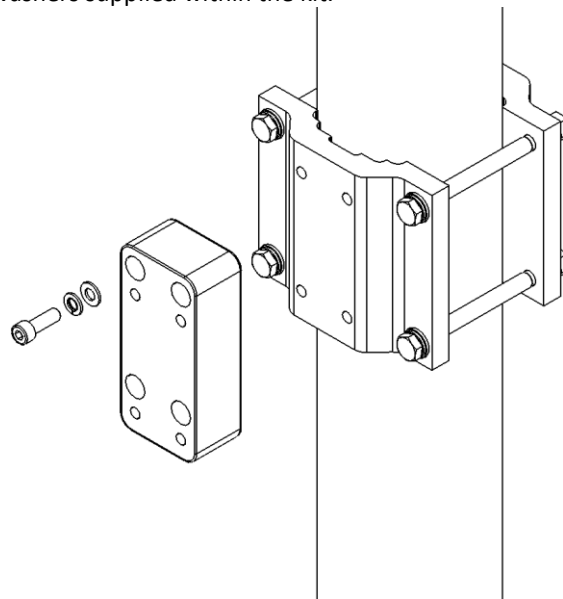
6-8 GHz

- 1 Mount and tighten the RFU-D-HP MC Dual Cir to the RFU-D-HP pillar adapter bracket using the four M8 Hex screws and washers supplied within the kit.

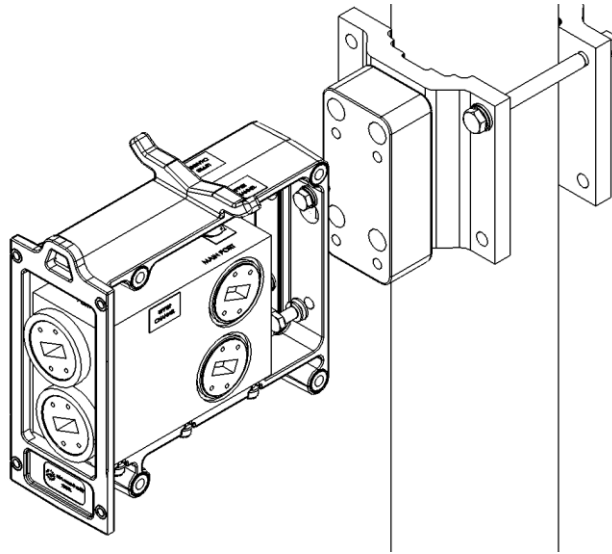


11 GHz only

- 1 Mount and tighten the RFU-D-HP MC extender to the RFU-D-HP pillar adapter bracket using the four M8 Hex screws and washers supplied within the kit.

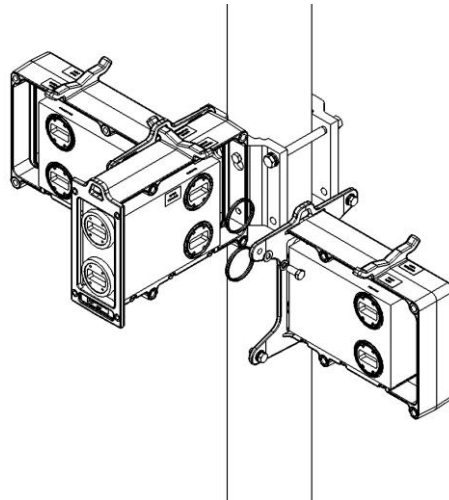


- 2 Mount and tighten the RFU-D-HP MC Dual Cir to the RFU-D-HP MC Extender using the four M8 Hex screws and washers supplied within the kit.

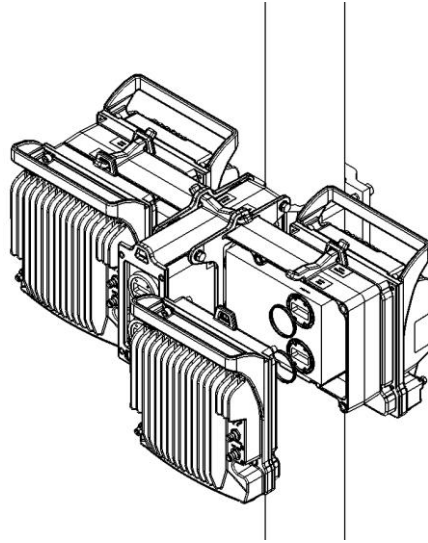


6-11GHz

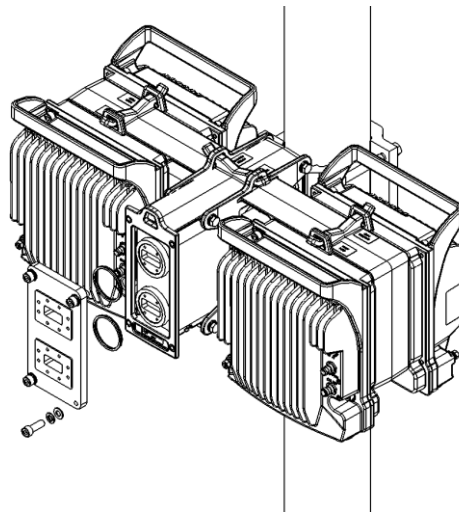
- 1 Mount and tighten the RFU-D-HP Dual Cir to each side of the IP-20 MC Dual Circ using the four M8 Hex screws and washers supplied in the IP-20 Dual Circ kit. Pay attention that the O-rings on the RFU-D-HP MC Dual Cir are well in place during the mounting.



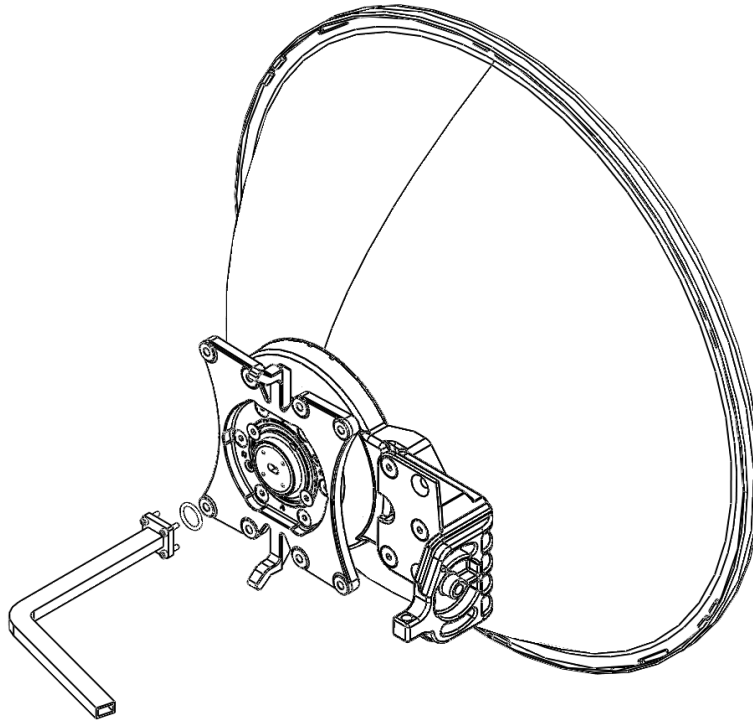
- 2 Mount and tighten the RFU-D-HP radios to each RFU-D-HP Dual Circ radio port using the four screws assembled on the RFU-D-HP radio. Pay attention that the O-rings on the RFU-D-HP Dual Circ are well in place during the mounting.



- 3 Mount and tighten the RFU-D-HP MC Remote mount adapter to the RFU-D-HP MC Dual Circ antenna ports using the four screws assembled on the RFU-D-HP radio. Pay attention that the O-rings on the RFU-D-HP MC Remote mount adapter are well in place during the mounting.



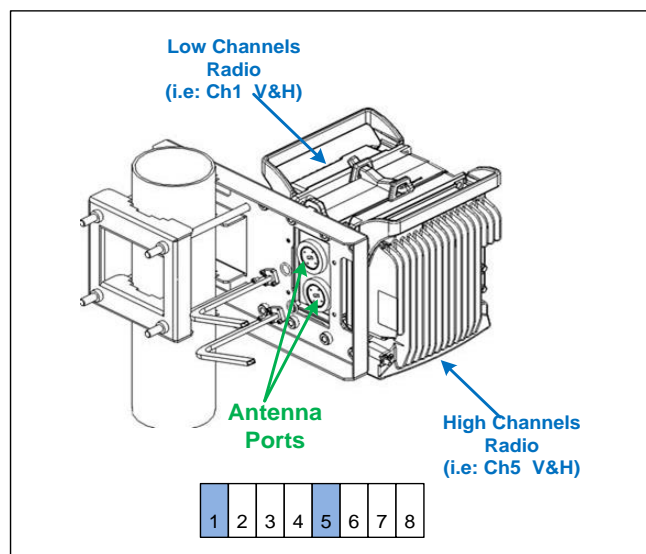
- 4 Mount and tighten the O-ring and the Flexible WG to the RFU-D-HP MC Remote mount adapter ports using the four screws supplied with the Flexible WG kit.
- 5 Mount and tighten the O-ring and flexible WG to both antenna ports using the four screws supplied with the flexible WG kit.



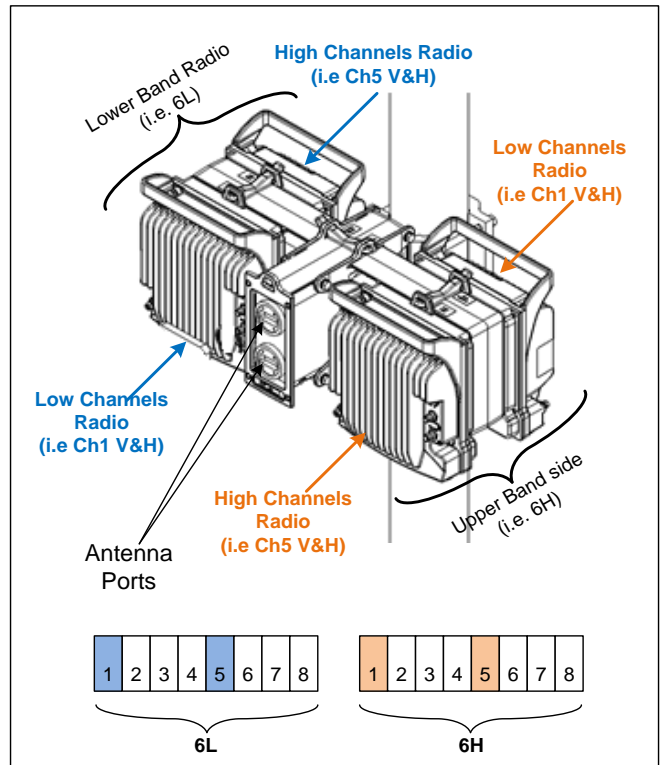
The following example illustrates a typical configuration, assuming:

- The regulation specifies a channelization of 8 consecutive 28/30 MHz channels (1-8ch).
- The actual channels in use are channels 1, 5.

4+0 Configuration



8+0 Configuration



Chapter 7 Installation Instructions for Configurations with Channel Filter-Based Branching

Channel filter-based branching configurations utilize the following components:

- OCU
- OCU Mounting Kit
- Short U-Bend
- Long-U-Bend
- Termination
- Splitter/Coupler

This chapter is set up as follows:

- *Channel Filter-Based Branching – Component Assembly* – Explains how to assemble each individual component used in channel filter-based branching configurations.
- *Channel Filter-Based Branching – Configurations* – Explains how to assemble channel filter-based branching configurations, with references to the relevant component assembly instructions.

Please contact your Cambium Network sales representative for details of filter-based branching solution with RFU-D-HP

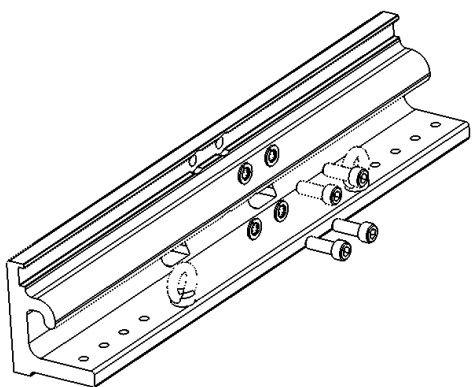
Channel Filter-Based Branching – Component Assembly

Assembling the OCU Mounting Kit

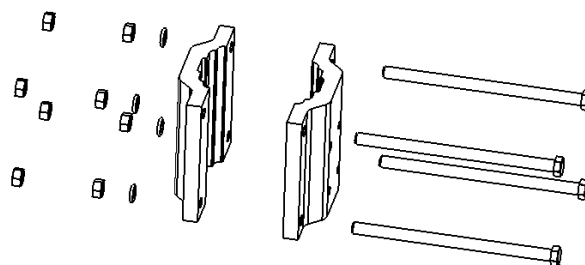
This section explains how to attach the OCU mounting kit for RFU-D-HP radio units to a 114 mm pole.

List of Items

Item	Description	Quantity	Marketing Model
1	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
2	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>



1 – Branching Pole Profile



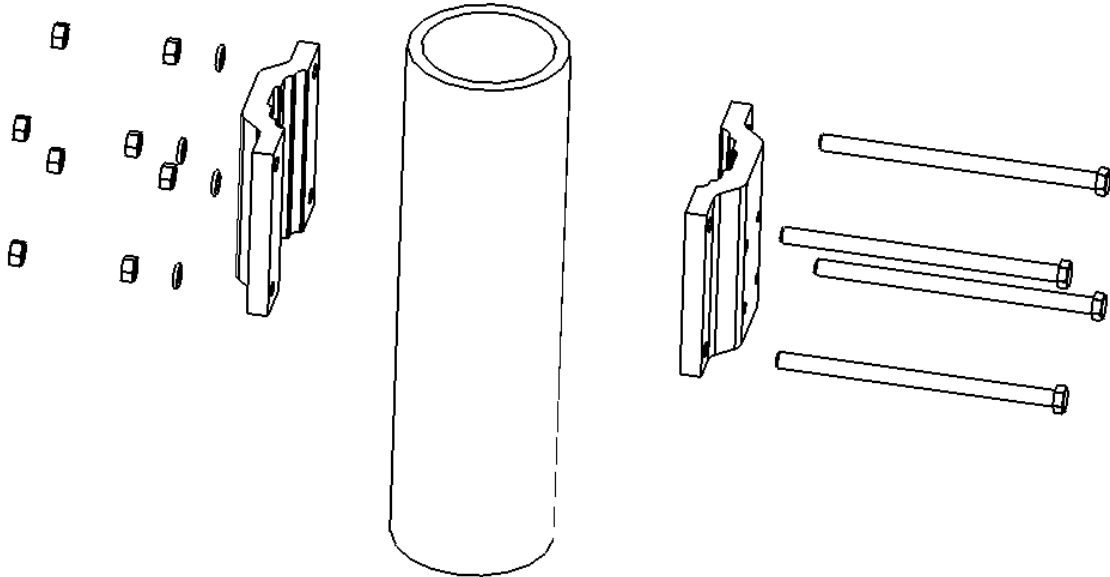
2 – Branching Pillars (with Screws, Nuts, and Washers)

Required Tools

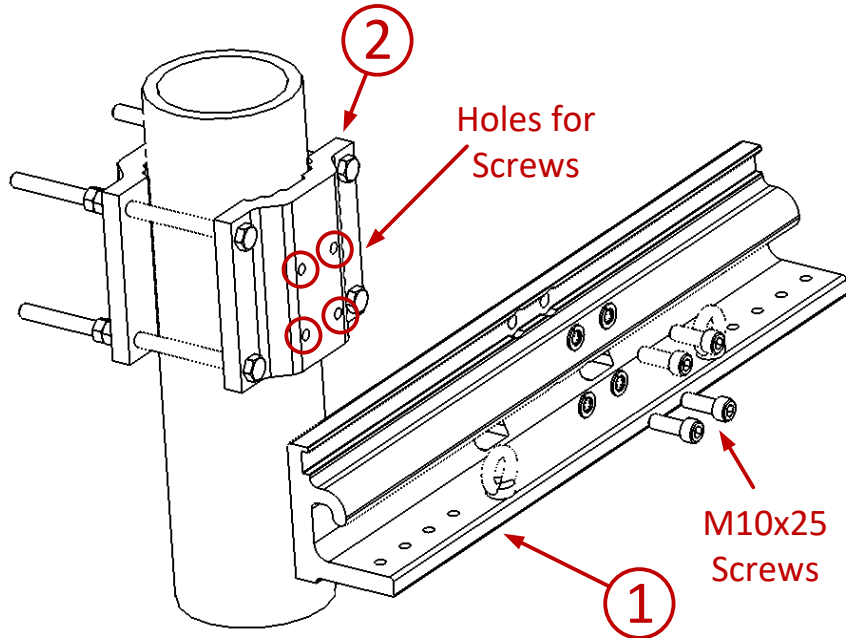
- Metric offset wrench key wrench set

Procedure

- 1 Mount and tighten the two Branching Pillars to a pole with a diameter of 114 mm using the four M10x150 screws, four washers, and eight nuts supplied with the OCU Mounting kit. Use torque of 45 Nm.



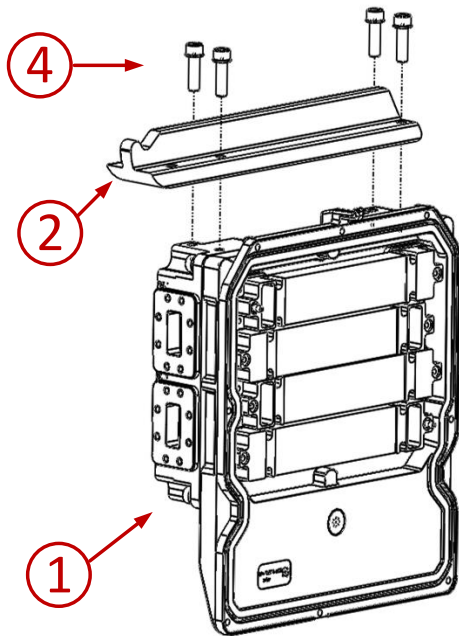
- 2 Mount and tighten the Branching Pole to one of the Branching Pillars using the four M10x25 screws supplied with the OCU Mounting kit. Use torque of 45 Nm.



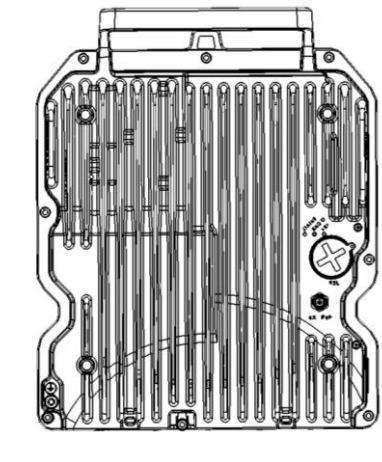
Assembling the OCU

List of Items

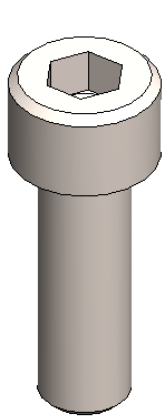
Item	Description	Quantity	
	RFU-D-HP OCU Kit	1 per radio	See Section Error! Reference source not found. , Error! Reference source not found.
1	OCU Body	1 per OCU kit	Included in OCU kit
2	OCU Rail	1 per OCU kit	Included in OCU kit
3	RFU-D-HP Radio	2-4	RFU-D-HP- <i>f-abc</i>
4	Screw Socket hex head SS DIN 912-M8x25-A2-70	4 per OCU kit	Included in OCU kit
5	Screw Socket hex head SS DIN 912-M8x30-A2-70	2 per OCU kit	Included in OCU kit
6	Washer, Plain, SS, DIN 125-A8.4-A2-70	6 per OCU kit	Included in OCU kit
7	Washer, Helical spring lock SS DIN 127-B8-A2-70	6 per OCU kit	Included in OCU kit
8	Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>



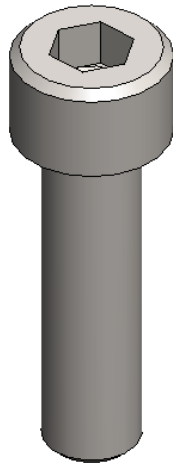
1, 2, 4 – OCU Kit (Body, Rail, and M8x25 Screws)



3 – RFU-D-HP Radio



4– M8x25 Screw



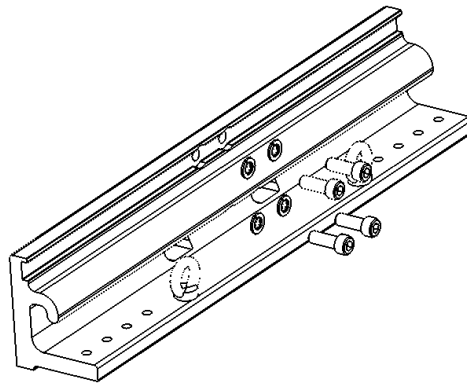
5 - M8x30 Screw



6– Washers, Plain



7 - Washers, Helical spring lock



8 – Branching Pole Profile

Required Tools

- Metric offset wrench key wrench set
- Metric Allen key set

Required Torque

- M5 screws (with radio) – 5.5 Nm
- M8 screws (with OCU) – 20 Nm

Configuration Options for OCU Kit Assembly

Attach the OCU rail to the OCU body, using the 4 M8 X 25 screws, helical washers, and flat washers, provided with the OCU kit.

The rail can be oriented in either of the two ways shown in *Figure 1* and *Figure 2*:

- With the nose of the rail protruding to the left when facing the inside of the OCU (*Figure 35*).

- With the nose of the rail protruding to the right when facing the inside of the OCU (Figure 36).

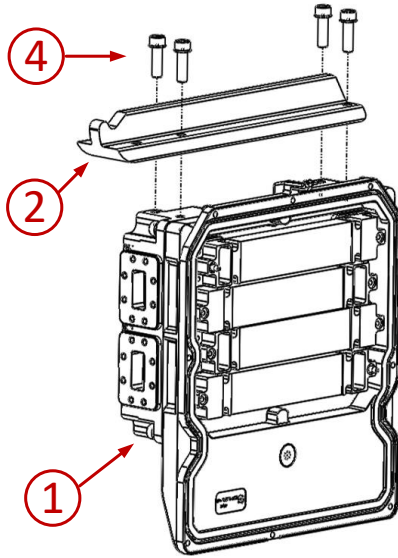


Figure 35: Left Rail Configuration

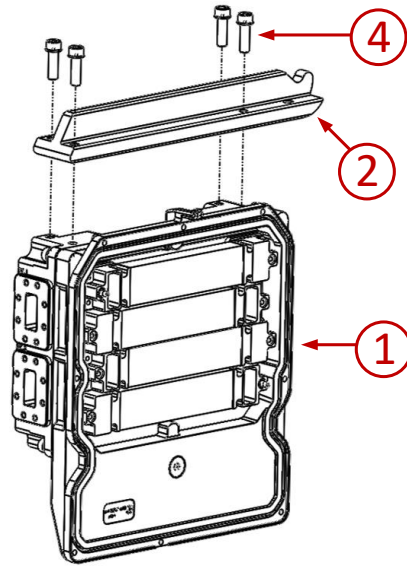


Figure 36: Right Rail Configuration

Figure 37 shows the Left Rail and Right Rail configurations in the context of a full configuration in which four radios and four OCUs are attached to the Branching Pole Profile.



Important: The figure below is illustrative only. Do not mount the OCU to the Branching Pole Profile until the radio unit has been attached to the OCU, as described below.

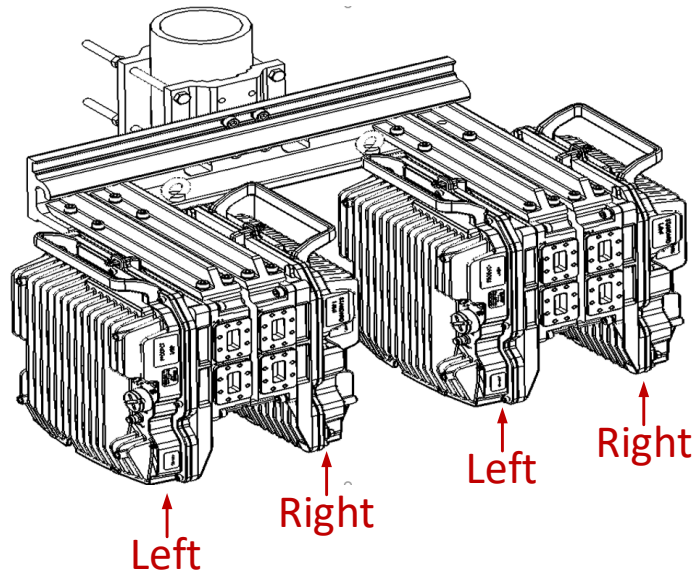


Figure 37: Left and Right Rail Configurations Together

Connecting the OCU to the RFU-D-HP Radio

Attach the M5 captive screws on the radio to the OCU kit, as shown in *Figure 38*. Partially fasten the screws, without tightening them, in a diagonal fashion as shown in *Figure 39*. Once all the screws have been partially fastened, tighten all the screws in the same order, using 5.5 Nm torque.

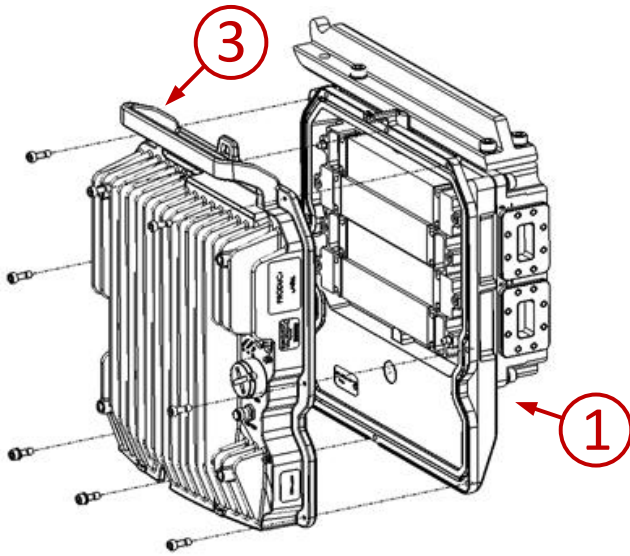


Figure 38: Attaching the Radio to the OCU

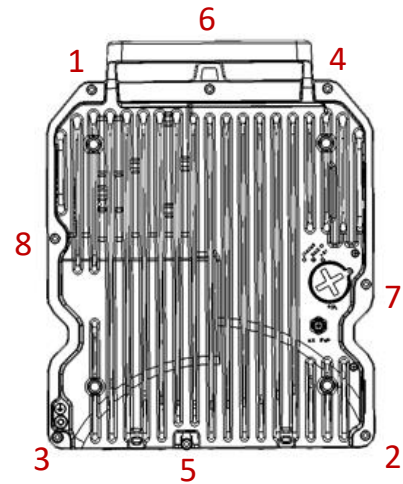


Figure 39: Order of Fastening Screws

Connecting the Combined OCU and Radio to the Branching Pole Profile

Once the OCU and radio unit have been connected, mount the complete OCU-radio unit to the Branching Pole Profile, as shown in *Figure 40* and *Figure 41*.

- 1 Angle the nose of the OCU Rail so as to hook underneath the nose of the Branching Pole Profile (*Figure 40*).

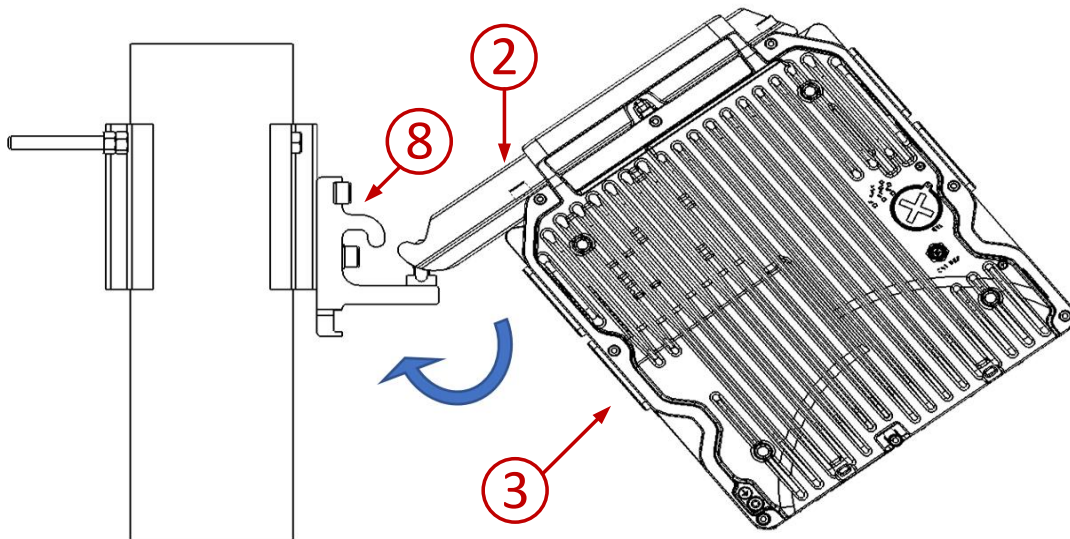


Figure 40: Angling the OCU Rail Underneath the Nose of the Branching Pole Profile

- 2 Level the OCU-radio unit so that the nose of the OCU Rail is locked underneath and inside of the nose of the Branching Pole Profile (Figure 41).

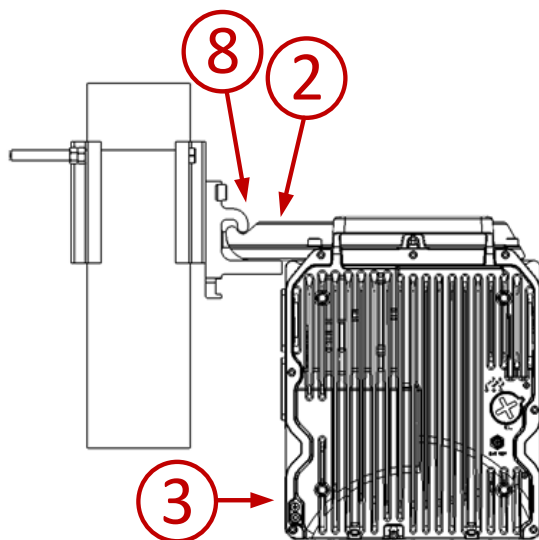


Figure 41: Final Position of OCU-Radio Locked into Branching Pole Profile

- 3 Partially attach the OCU-radio unit to the Branching Pole Profile with the two M8-30 screws included in the OCU kit, along with the remaining helical and flat washers, as shown in Figure 42. It is very important that at this point in the procedure, you do not fully tighten the screws. The screws should only be fully tightened after all the U-Bends and (if necessary) Terminations have been attached!

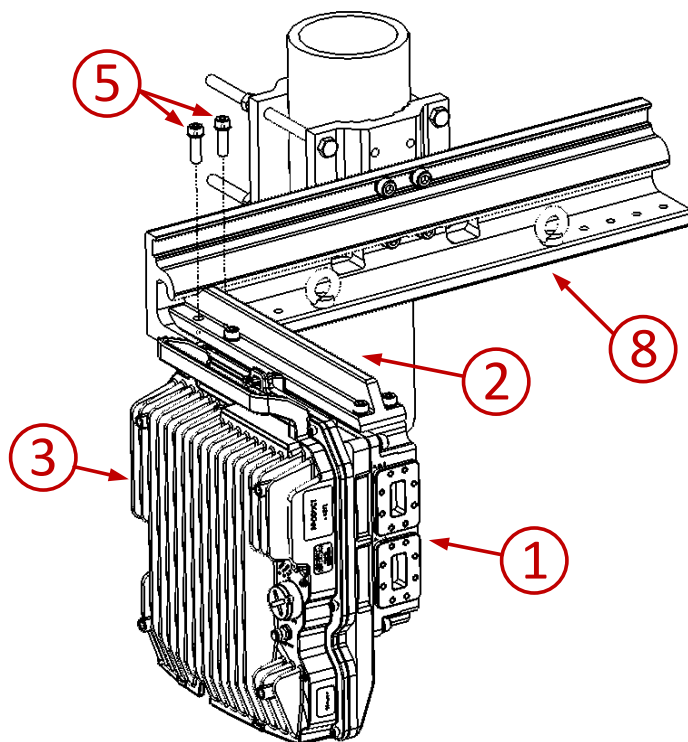


Figure 42: Securing the OCU-Radio Unit to the Branching Pole Profile

Waveguide Assemblies

At this point in the installation, you must install all required waveguide assemblies, such as U-Bends, Flexible Waveguides, and Terminations. For instructions, refer to the specific type of configuration you are installing in Section Chapter 0, *Channel Filter-Based Branching – Configurations*.

Tightening the M8-30 Screws

When you have finished installing all waveguides, and all of the radio ports have been covered, you must fully tighten the two M8-30 screws that attach the OCU-radio unit to the Branching Pole Profile as shown above in *Figure 42*.

Cable and Shackle Assembly

Once all the screws have been fully fastened, the complete assembly is ready to be raised via a crane. Make sure to loop the cable through both shackles on the OCU Rail, as shown in *Figure 43*. You must also loop the cable through all the RFU-D-HP radio handles in the configuration.

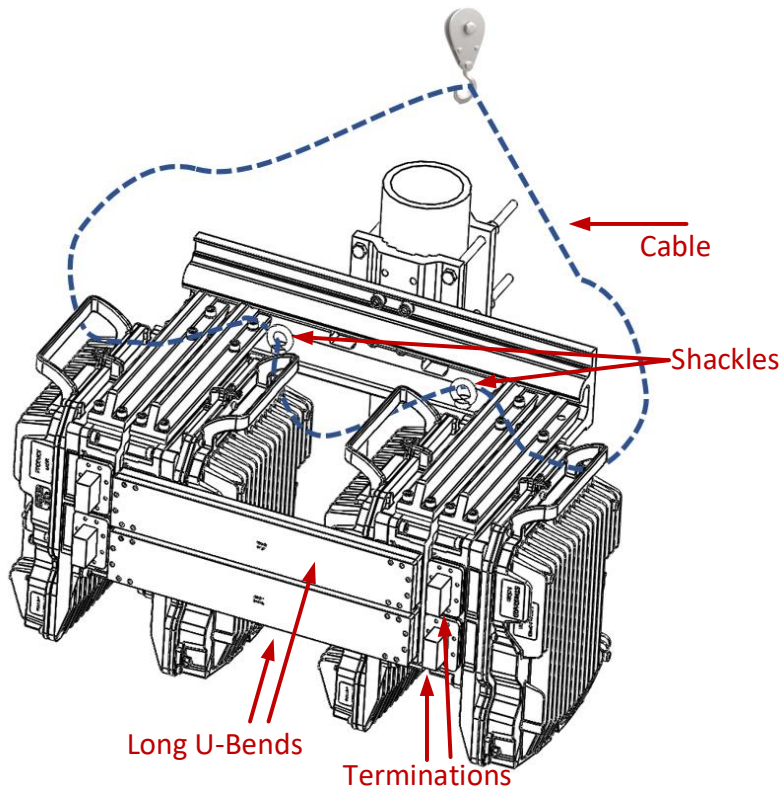


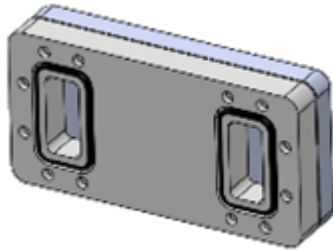
Figure 43: Raising the Assembly Via Crane

Assembling a Short U-Bend

This guide explains how to attach a Short U-Bend between the radio ports of two OCUs. Short U-Bends are used to connect the radio ports of adjacent OCUs on the side closest to the pole mount.

List of Items

Item	Description	Quantity	
1	RFU-D-HP Branching Short U-Bend Kit	Depends on Configuration	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
2	#8-32 Socket Hex Screws	12 Per U-Bend	Embedded in U-Bend



1 – Short U-Bend

Required Tools

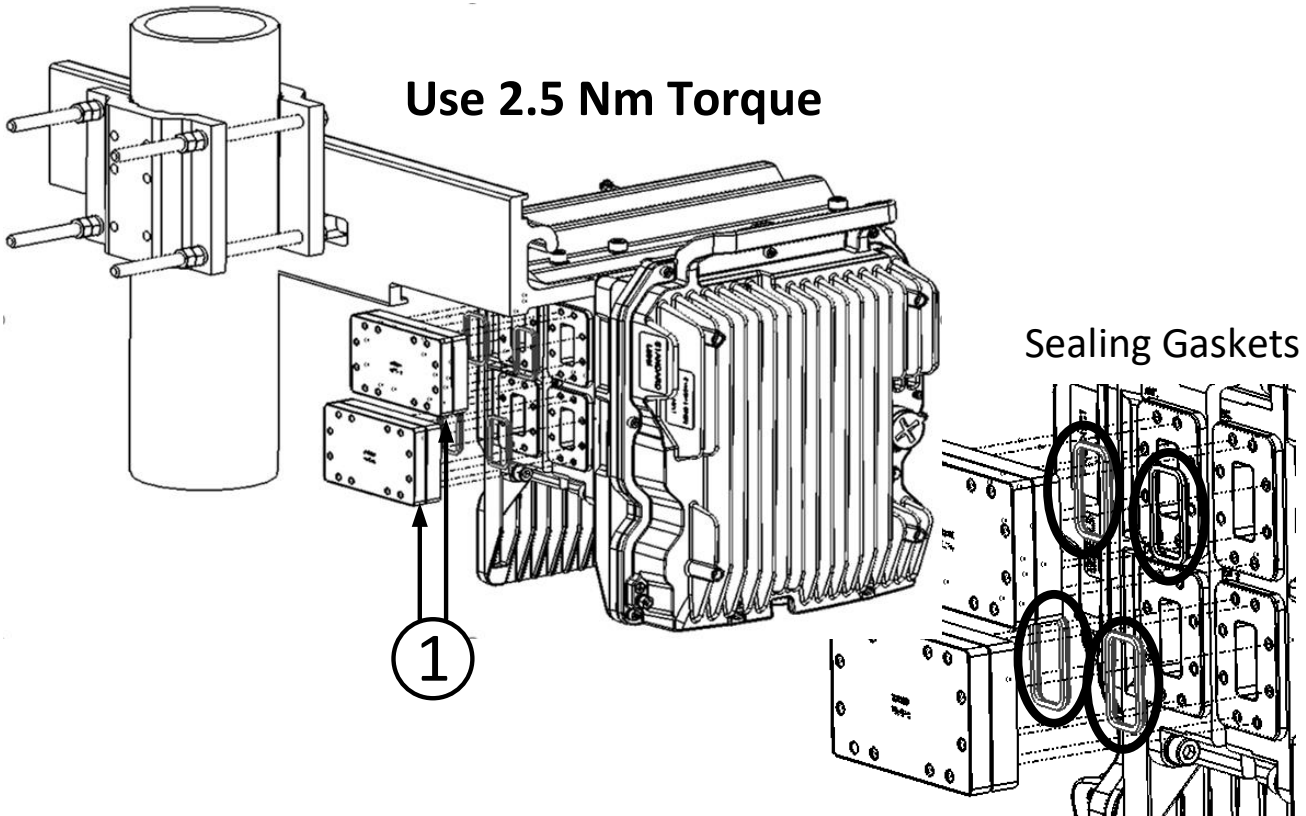
- Imperial Allen key set

Required Torque

- #8-32 socket hex screws (embedded in U-Bend) – 2.5 Nm

Procedure

- 1 Before attaching the U-Bend, make sure that the U-Bend is already fitted with bushings in both ports. The U-Bend should be supplied with bushings to seal the RF.
- 2 Short U-Bends are connected between adjacent radio ports on the side closest to the Pole Mount. Place the U-Bend so that the embedded #8-32 socket hex screws are in line with the radio ports of the OCUs, as shown in the figure below. Make sure the sealing gaskets supplied with the U-Bend are in place before mounting the U-Bends.

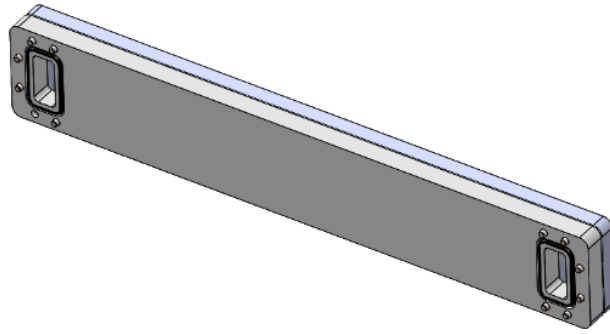


Assembling a Long U-Bend

Long U-Bends are used to connect the radio ports of adjacent OCUs on the far side from the pole mount.

List of Items

Item	Description	Quantity	
1	RFU-D-HP Branching Long U-Bend Kit	Depends on Configuration	FXDH-RM-LU-Bend-06 FXDH-RM-LU-Bend-7-8 FXDH-RM-LU-Bend-11
2	#8-32 Socket Hex Screws	12 Per U-Bend	Embedded in U-Bend



1 – Long U-Bend

Required Tools

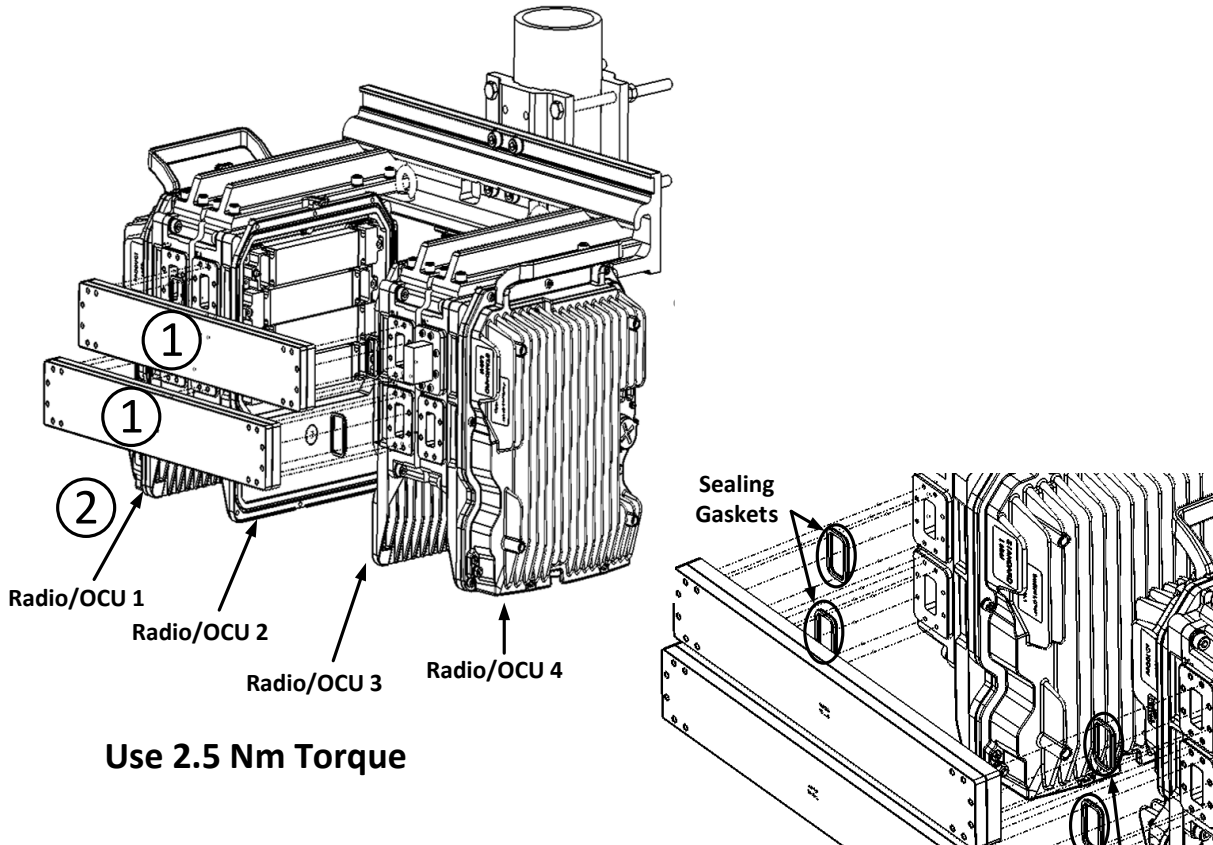
- Imperial Allen key set

Required Torque

- #8-32 socket hex screws (embedded in U-Bend) – 2.5 Nm

Procedure

- 1 Before attaching the U-Bend, make sure that the U-Bend is already fitted with bushings in both ports. The U-Bend should be supplied with bushings to seal the RF.
- 2 Long U-Bends are connected between adjacent radio ports on opposite sides of the Branching Pole Profile. Place the U-Bend so that the embedded #8-32 socket hex screws are in line with the radio ports of the OCUs, as shown in the figure below. Make sure the sealing gaskets supplied with the U-Bend are in place before mounting the U-Bends.



Use 2.5 Nm Torque

Assembling a Termination

All ports not otherwise covered or in use should be covered by a Termination.

List of Items

Item	Description	Quantity	
1	RFU-D-HP Termination Kit	Depends on Configuration	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
2	#8-32/#10-32 Socket Hex Screws	8 Per Termination Kit	Included in Termination Kit
3	Washer, Helical spring lock, SS, ANSI, #8/#10	8 Per Termination Kit	Included in Termination Kit
4	Washer, Plain, SS, DIN-125 A4/A5. 3-A2-70	8 Per Termination Kit	Included in Termination Kit
5	Sealing Gasket	1 Per Termination Kit	Included in Termination Kit

6	Screw & washer assembly, DIN 912--A2-70- M4x12/M5x14	8 Per Termination Kit	Included in Termination Kit
---	--	-----------------------	-----------------------------



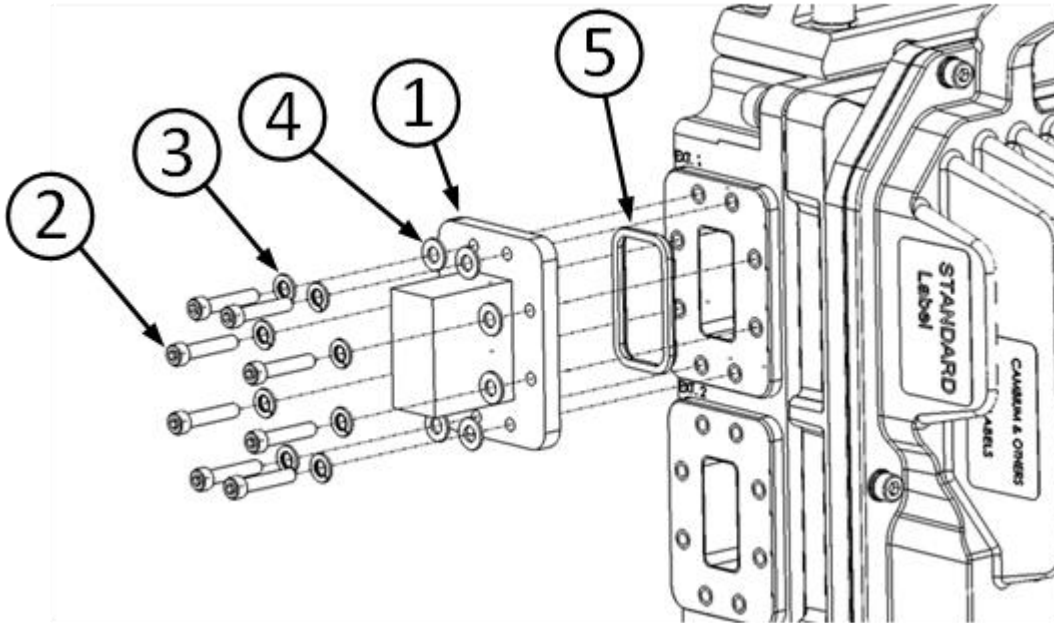
Note: The numbering in the figure below refers to Imperial screws and washers. If necessary, a Metric screw and washer assembly package has also been provided (#6 above).

Required Tools

- Imperial Allen key set
- Metric Allen key set

Required Torque

- #8-32/M4 socket hex screws – 3 Nm
- #10-32/M5 socket hex screws – 5.4 Nm



Assembling a Splitter or Coupler for Filter-Based Branching

List of Items

Item	Description	Quantity	
1a	RFU-D-HP Splitter Kit	Depends on Configuration	FXDH-RM-MD-SPLTR-06 FXDH-RM-MD-SPLTR-7-8 FXDH-RM-MD-SPLTR-11
1b	RFU-D-HP Coupler Kit	Depends on Configuration	FXDH-RM-MD-CPLR-06 FXDH-RM-MD-CPLR-7-8 FXDH-RM-MD-CPLR-11
2	6 GHz: #10-32 Screws 7-11 GHz #8-32 Screws	8 Per Kit	Included in Splitter/Coupler Kit

3	6 GHz: Washer, Helical spring lock, SS, ANSI, #10 7-11GHz: Washer, Helical spring lock,SS,ANSI,#8	8 Per Kit	Included in Splitter/Coupler Kit
4	6GHz: Washer, Plain, SS, DIN 125-A5.3-A2-70 7-11GHz: Washer, Plain, SS DIN 125-A4.3-A2-70	8 Per Kit	Included in Splitter/Coupler Kit
5	Sealing Gasket	1 Per Kit	Included in Splitter/Coupler Kit

Required Tools

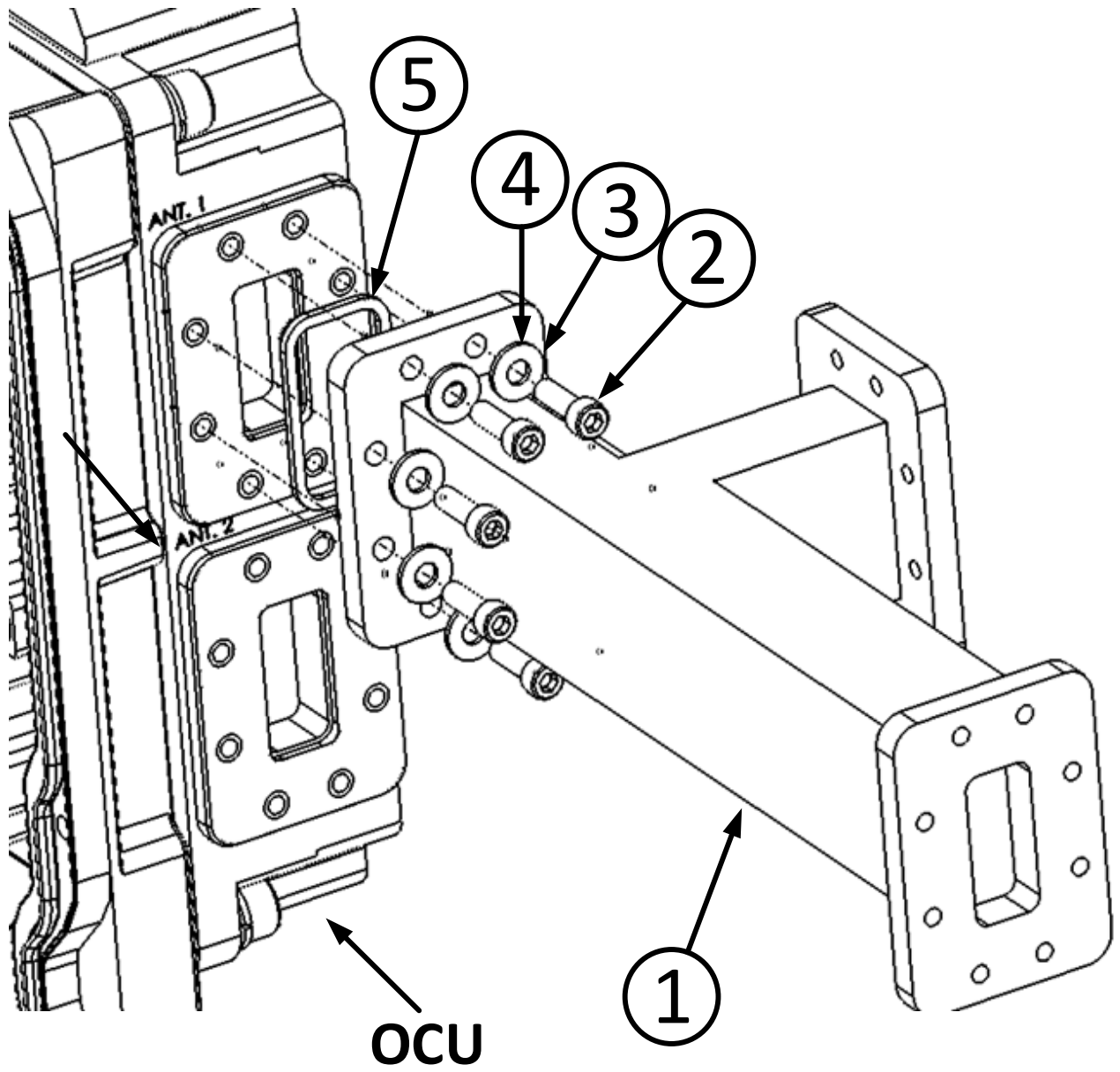
- Imperial Allen key set

Required Torque

- #8-32 socket hex screws – 2 Nm
- #10-32 socket hex screws – 3.2 Nm

Procedure


A Remote Mount Splitter or Remote Mount Coupler is attached to the OCU using the 8 screws, helical spring washers, and plain washers provided with the Coupler or Splitter kit, as shown in the figure below. The other interfaces can be connected to the antenna or flexible waveguide, depending on the configuration.



Channel Filter-Based Branching – Configurations

2+0 Single Polarization

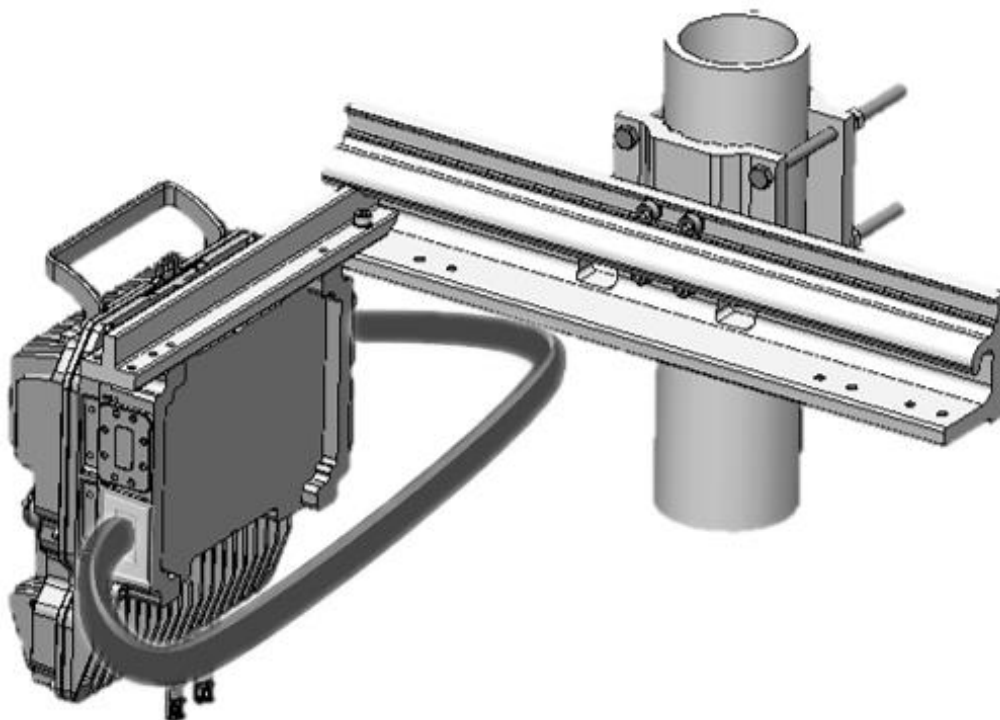
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	1	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	1	See Section Error! Reference source not found. , <i>Error! Reference source not found.</i>
5	RFU-D-HP Termination Kit	1	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	Flexible Waveguides	2	

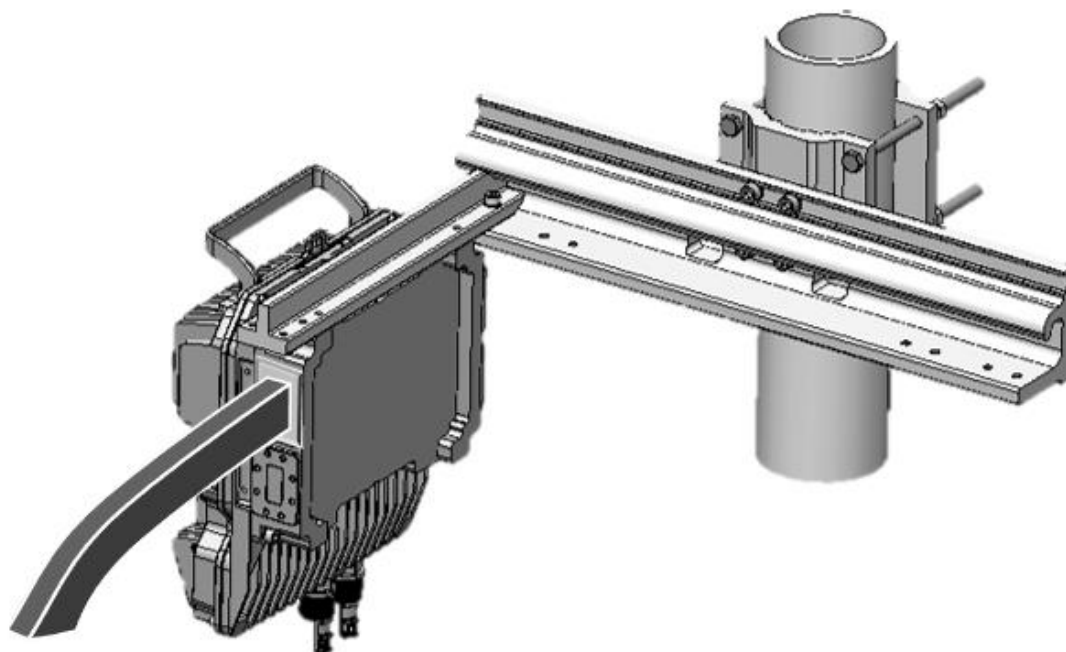
Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble the OCU, attach the RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. Use a Left Rail Configuration to assemble the OCU. See Section Chapter 0, *Assembling the OCU*.
- 3 On the side of the OCU facing the pole, attach a Termination to the lower radio port. See Section Chapter 0, *Assembling a Termination*.

- 4 Connect a flexible waveguide from the lower radio port of the OCU on the side facing away from the pole to the upper radio port of the OCU on the side facing towards the pole.




- 5 Connect a flexible waveguide from the upper radio port of the OCU on the side facing away from the pole to the antenna.



2+0 Dual Polarization

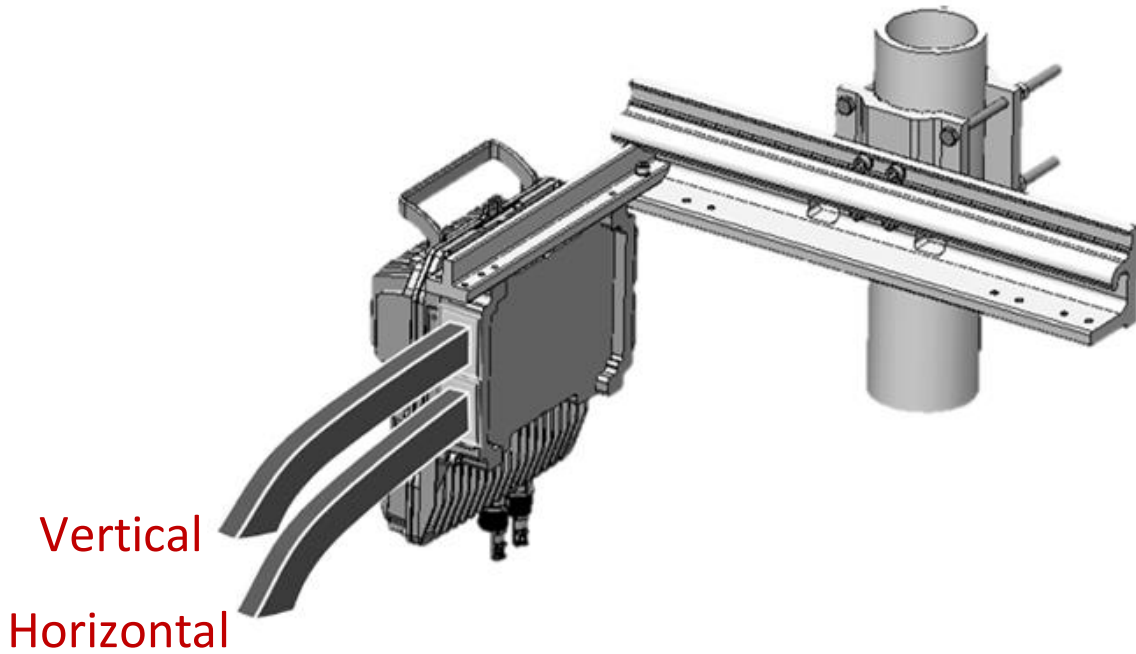
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	1	See Section 0,  Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as availability of any specific mediation device. Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region. Radio Unit
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	1	See Section Error! Reference source not found. , <i>Error! Reference source not found.</i>
5	RFU-D-HP Termination Kit	2	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
7	Flexible Waveguide Kit	2	

Procedure


- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble the OCU, attach the RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. Use a Left Rail Configuration to assemble the OCU. See Section Chapter 0, *Assembling the OCU*.
- 3 On the side of the OCU facing the pole, attach a Termination to each radio port. See Section Chapter 0, *Assembling a Termination*.
- 4 Connect the OMT to the antenna. See Steps 1-4 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.

- On the side of the OCU facing away from the pole, connect the flexible waveguides between the radio ports and the OMT.



4+0 Single Polarization

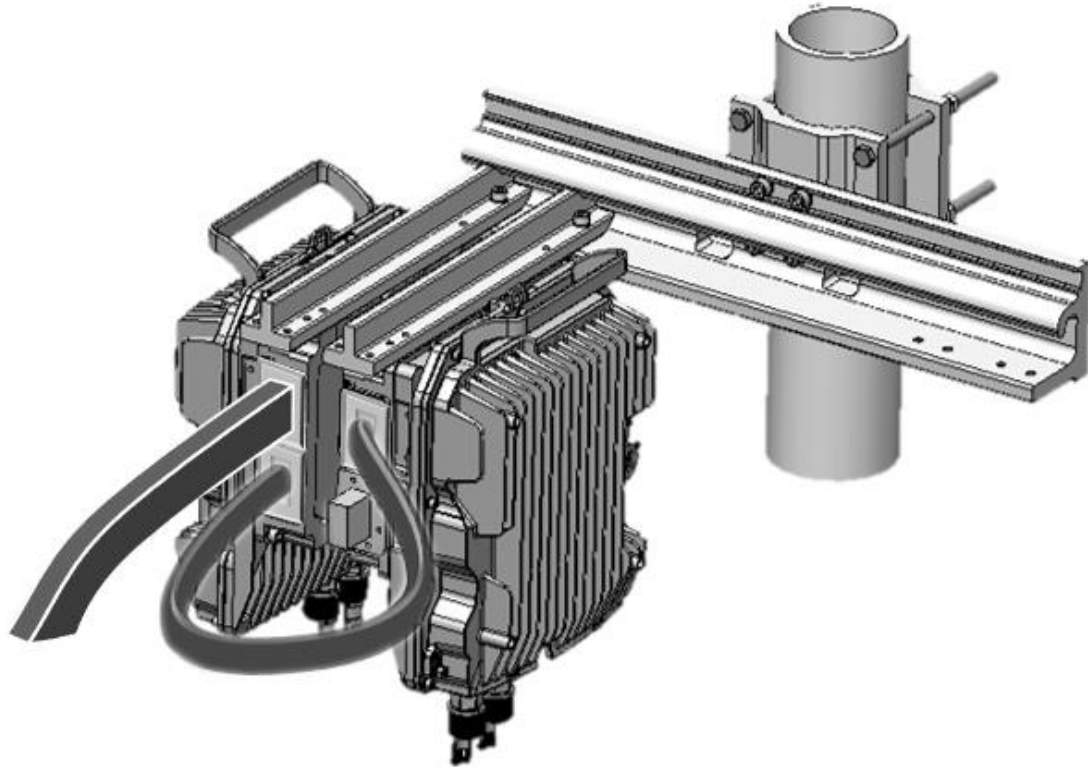
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	2	See Section 0,
			 <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p>
			Radio Unit
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	2	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	1	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	2	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	Flexible Waveguides	2	


Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble an OCU using a Left Rail Configuration, attach the an RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. See Section Chapter 0, *Assembling the OCU*.
- 3 Assemble the second OCU using a Right Rail Configuration, attach the second RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. See Section Chapter 0, *Assembling the OCU*.
- 4 On the side of the OCU facing the pole, attach Short U-Bends between the radio ports of the two OCUs. See Section Chapter 0, *Assembling a Short U-Bend*.
- 5 On the side facing away from the pole:
 - Connect a flexible waveguide from the lower radio port of the OCU on the left to the upper radio port of the OCU on the right.
 - Connect a flexible waveguide from the upper radio port of the OCU on the left to the antenna.
 - Connect a Termination to the lower radio port of the OCU on the right. See Section Chapter 0, *Assembling a Termination*.



4+0 Dual Polarization

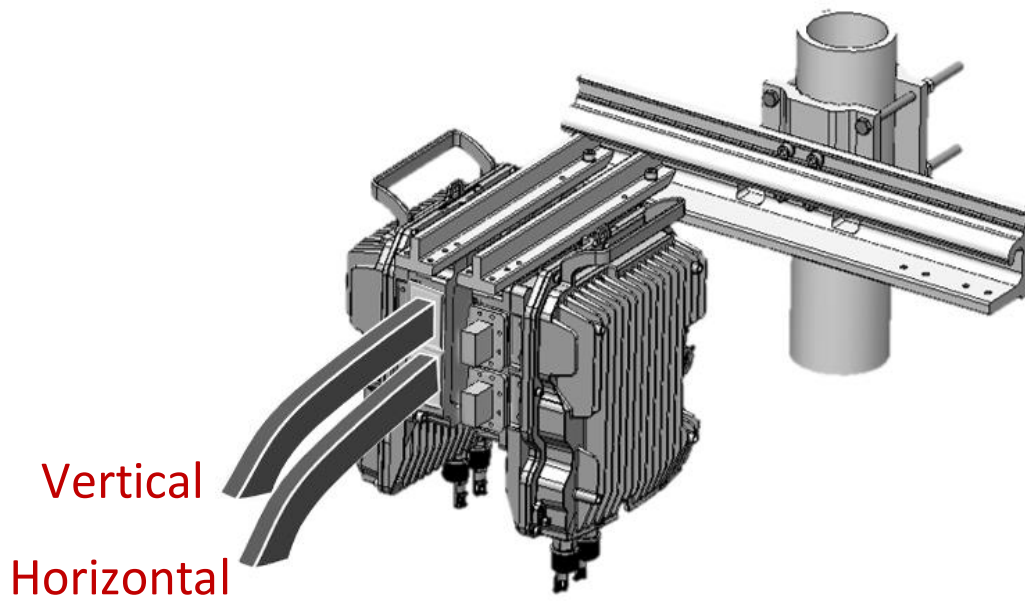
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	2	See Section 0, <div style="display: flex; align-items: center; gap: 10px;">  <div> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

4	RFU-D-HP OCU Kit	2	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	2	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	2	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
8	Flexible Waveguides	2	


Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble an OCU using a Left Rail Configuration, attach the an RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. See Section Chapter 0, *Assembling the OCU*.
- 3 Assemble the second OCU using a Right Rail Configuration, attach the second RFU-D-HP radio to the OCU, and connect the radio-OCU assembly to the Branching Pole Profile. See Section Chapter 0, *Assembling the OCU*.
- 3 On the side of the OCU facing the pole, attach Short U-Bends between the radio ports of the two OCUs. See Section Chapter 0, *Assembling a Short U-Bend*.
- 4 Connect the OMT to the antenna. See Steps 1-4 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.
- 5 On the side facing away from the pole:
 - Connect flexible waveguides from both radio ports of the OCU on the left to the OMT.
 - Connect Terminations to both radio ports of the OCU on the right. See Section Chapter 0, *Assembling a Termination*.



6+0 Single Polarization

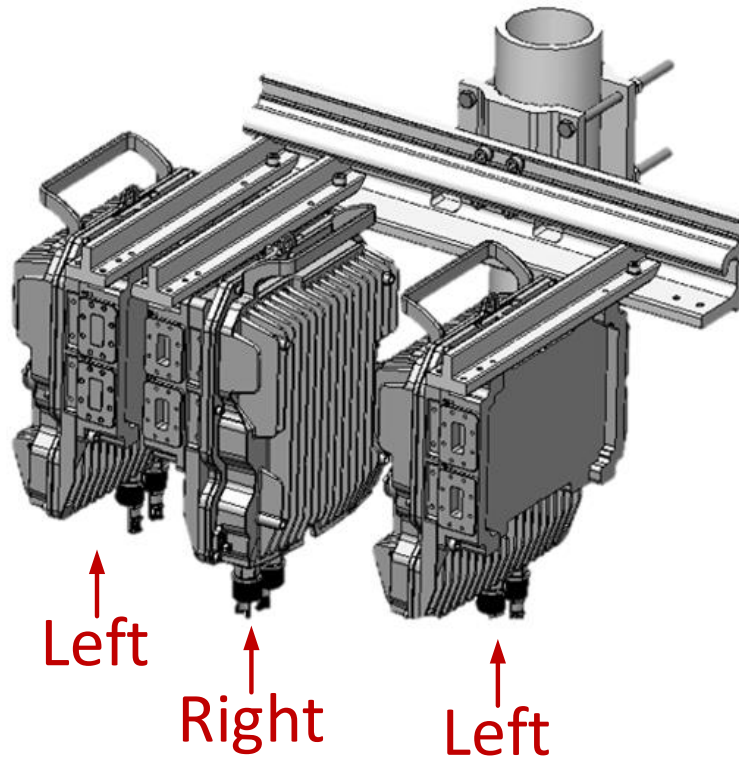
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	3	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	3	See Section Error! Reference source not found. , Error! Reference source not found.

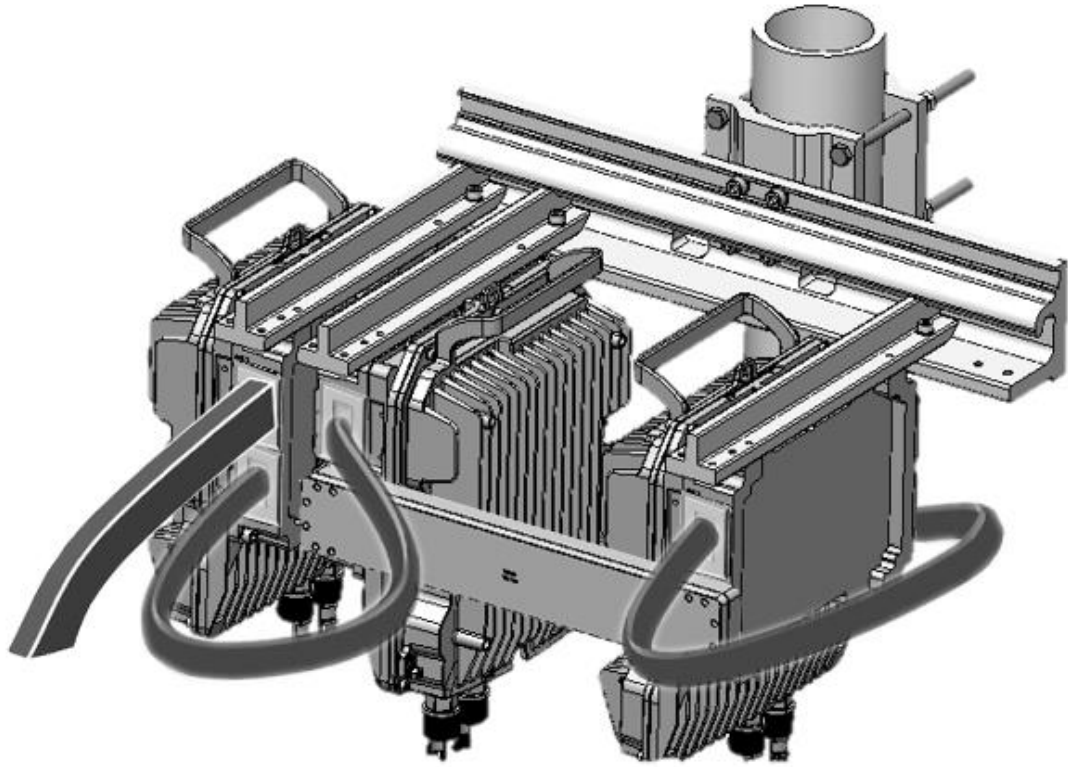
5	RFU-D-HP Termination Kit	1	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	2	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP Branching Long U-Bend Kit	1	FXDH-RM-LU-Bend-06 FXDH-RM-LU-Bend-7-8 FXDH-RM-LU-Bend-11
8	Flexible Waveguides	3	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble three OCUs, two using a Left Rail Configuration and one using a Right Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 3 On the side of the OCU facing the pole:
 - Attach Short U-Bends between the radio ports of the two OCUs. See Section Chapter 0, *Assembling a Short U-Bend*.
 - Attach a Termination to the upper radio port of the OCU on the right. See Section Chapter 0, *Assembling a Termination*.
- 4 On the side facing away from the pole:
 - Connect a flexible waveguide from the upper radio port of the OCU on the left to the antenna.
 - Connect a flexible waveguide from the lower radio port of the OCU on the left to the upper radio port of the adjacent OCU.
 - Connect a Long U-Bend between the lower radio port of the middle OCU and the lower radio port of the OCU on the right. See Section Chapter 0, *Assembling a Long U-Bend*.
 - On the OCU on the right, connect a flexible waveguide from the upper radio port to the lower radio port on the side of the OCU facing the pole.



6+0 Dual Polarization

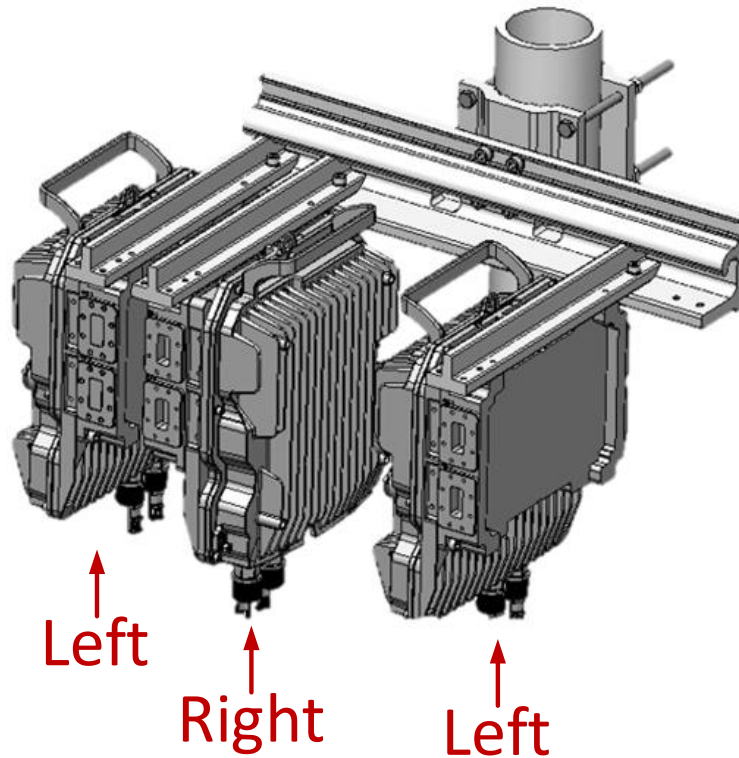
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	3	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

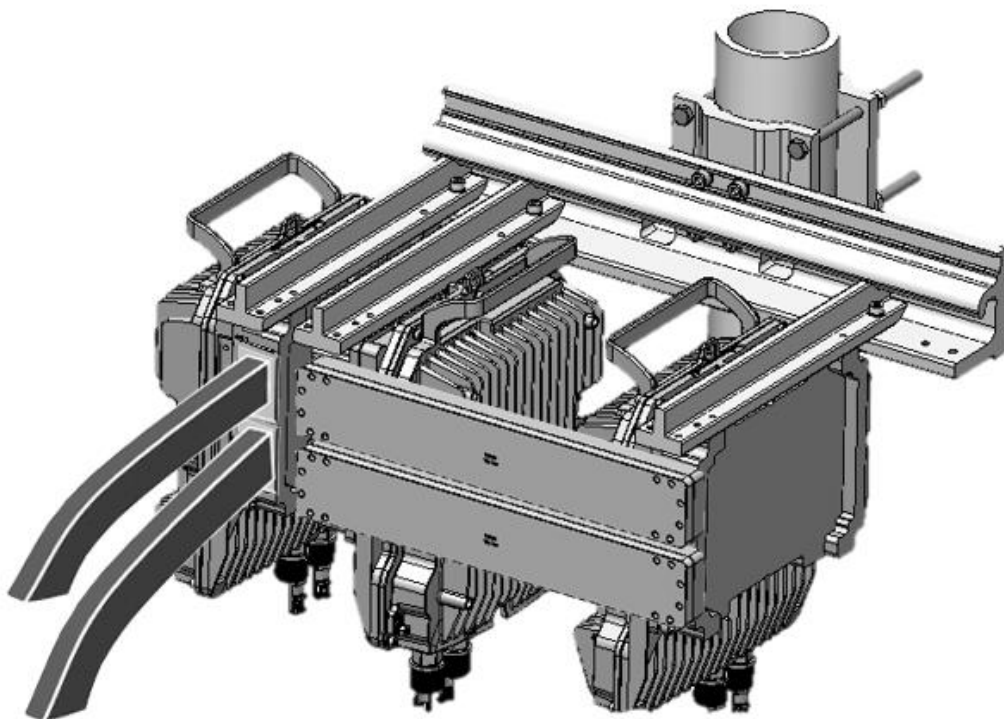
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	3	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	2	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	2	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP Branching Long U- Bend Kit	2	FXDH-RM-LU-Bend-06 FXDH-RM-LU-Bend-7-8 FXDH-RM-LU-Bend-11
8	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
9	Flexible Waveguides	2	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble three OCUs, two using a Left Rail Configuration and one using a Right Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 3 On the side of the OCU facing the pole:
 - Attach Short U-Bends between the radio ports of the two OCUs. See Section Chapter 0, *Assembling a Short U-Bend*.
 - Attach a Termination to each radio port of the OCU on the right. See Section Chapter 0, *Assembling a Termination*.
- 4 Connect the OMT to the antenna. See Steps 1-4 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.
- 5 On the side facing away from the pole:
 - On the OCU to the left, connect a flexible waveguide from each radio port of the OCU to the OMT.
 - Connect a Long U-Bend between each set of radio ports on the two OCUs to the right. See Section Chapter 0, *Assembling a Long U-Bend*.



8+0 Single Polarization

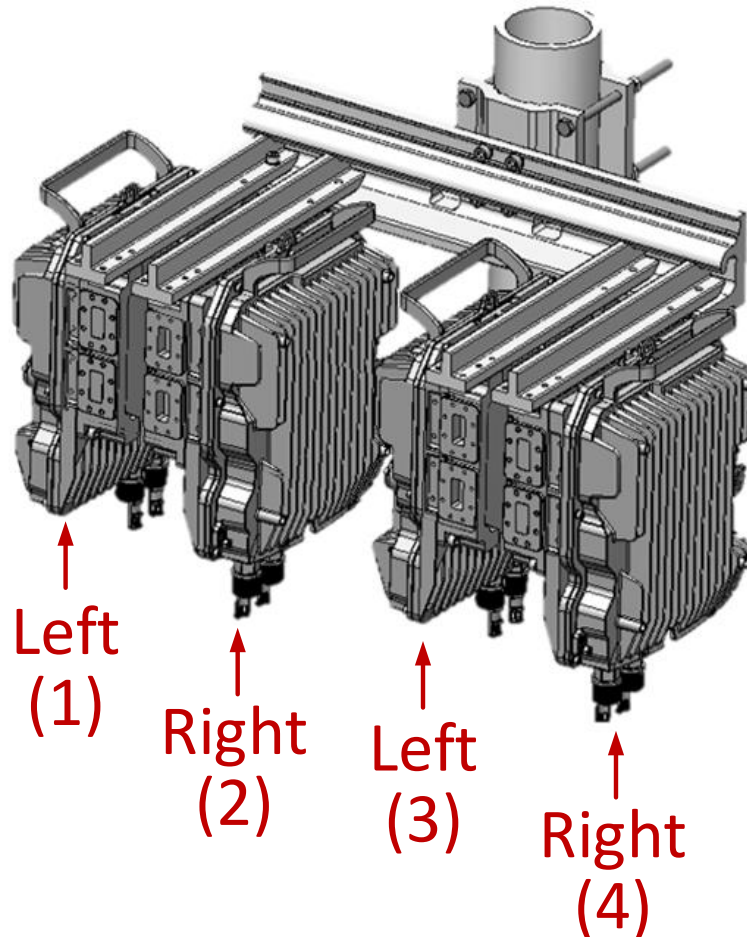
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	4	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

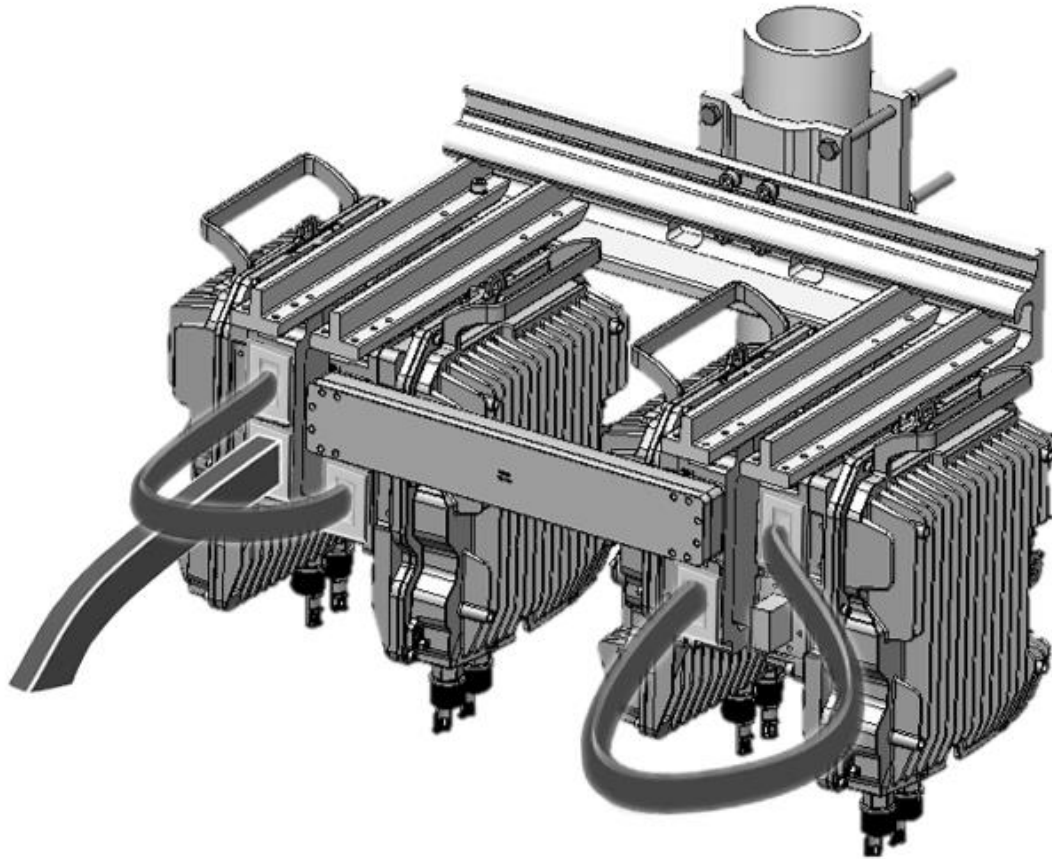
4	RFU-D-HP OCU Kit	4	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	1	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	4	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP Branching Long U-Bend Kit	1	FXDH-RM-LU-Bend-06 FXDH-RM-LU-Bend-7-8 FXDH-RM-LU-Bend-11
8	Flexible Waveguides	3	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble four OCUs, two using a Left Rail Configuration and two using a Right Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 3 On the side of the OCU facing the pole, for each pair of adjacent OCUs attach two Short U-Bends between the adjacent radio ports. See Section Chapter 0, *Assembling a Short U-Bend*.
- 4 On the side facing away from the pole (refer to the numbering in the figure above):
 - Connect a flexible waveguide from the upper radio port of OCU 1 to the lower radio port of OCU 2.
 - Connect a flexible waveguide from the lower radio port of OCU 1 to the antenna.
 - Connect a flexible waveguide from the lower radio port of OCU 3 to the upper radio port of OCU 4.
 - Connect a Long U-Bend between the upper radio port of OCU 2 and the upper radio port of OCU 3. See Section Chapter 0, *Assembling a Long U-Bend*.
 - Attach a Termination to the lower radio port of OCU 4. See Section Chapter 0, *Assembling a Termination*.



8+0 Dual Polarization

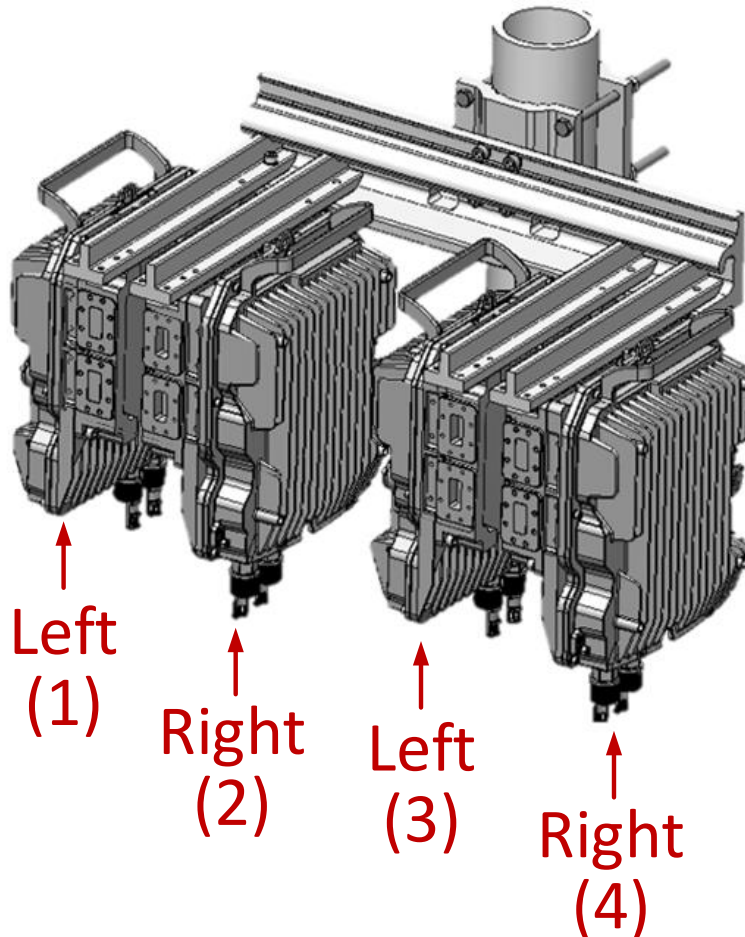
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	4	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note! Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

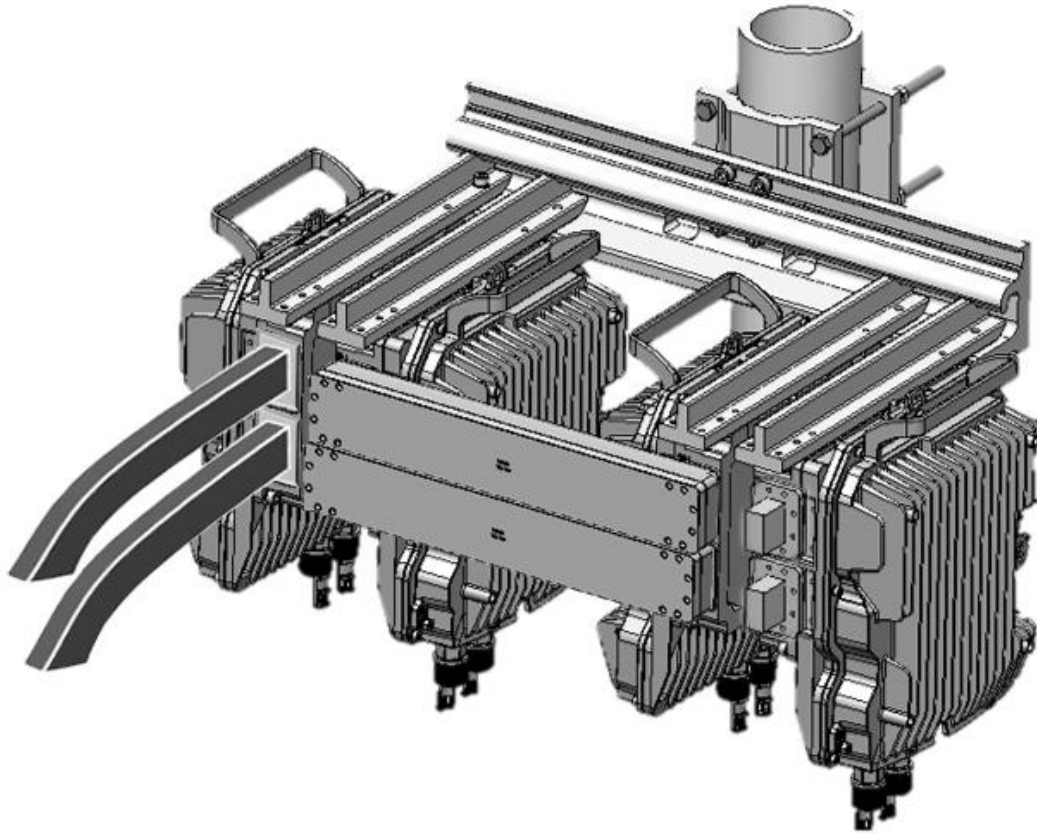
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	4	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	2	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	4	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP Branching Long U-Bend Kit	2	FXDH-RM-LU-Bend-06 FXDH-RM-LU-Bend-7-8 FXDH-RM-LU-Bend-11
8	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
9	Flexible Waveguides	2	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble four OCUs, two using a Left Rail Configuration and two using a Right Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 3 On the side of the OCU facing the pole, for each pair of adjacent OCUs attach two Short U-Bends between the adjacent radio ports. See Section Chapter 0, *Assembling a Short U-Bend*.
- 4 Connect the OMT to the antenna. See Steps 1-4 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.
- 5 On the side facing away from the pole (refer to the numbering in the figure above):
 - Connect a flexible waveguide from each of the radio ports on OCU 1 to the OMT.
 - Connect Long U-Bends between the upper and lower radio ports of OCU 2 and OCU 3. See Section Chapter 0, *Assembling a Long U-Bend*.
 - Attach a Termination to each radio port on OCU 4. See Section Chapter 0, *Assembling a Termination*.



1+1 HSB

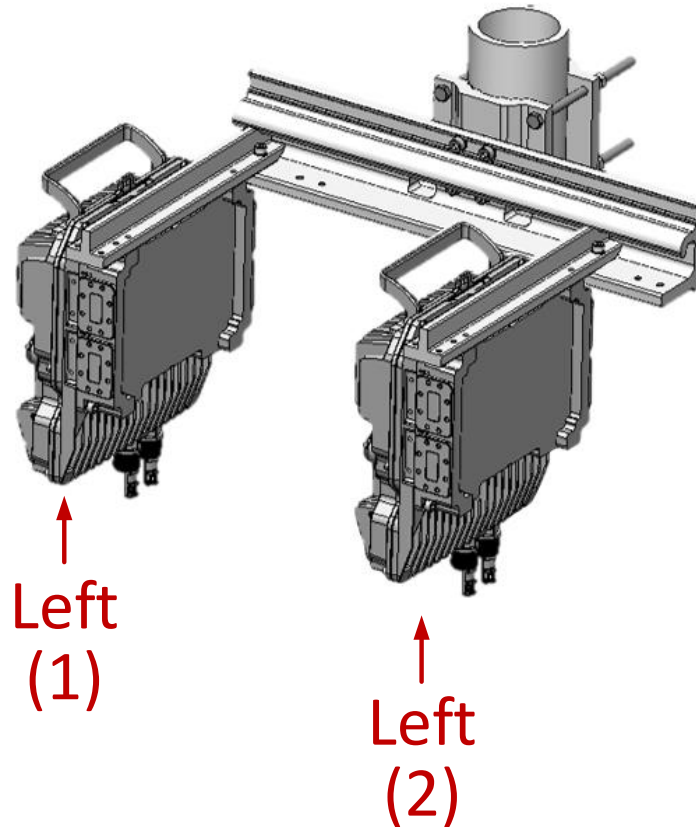
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	2	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

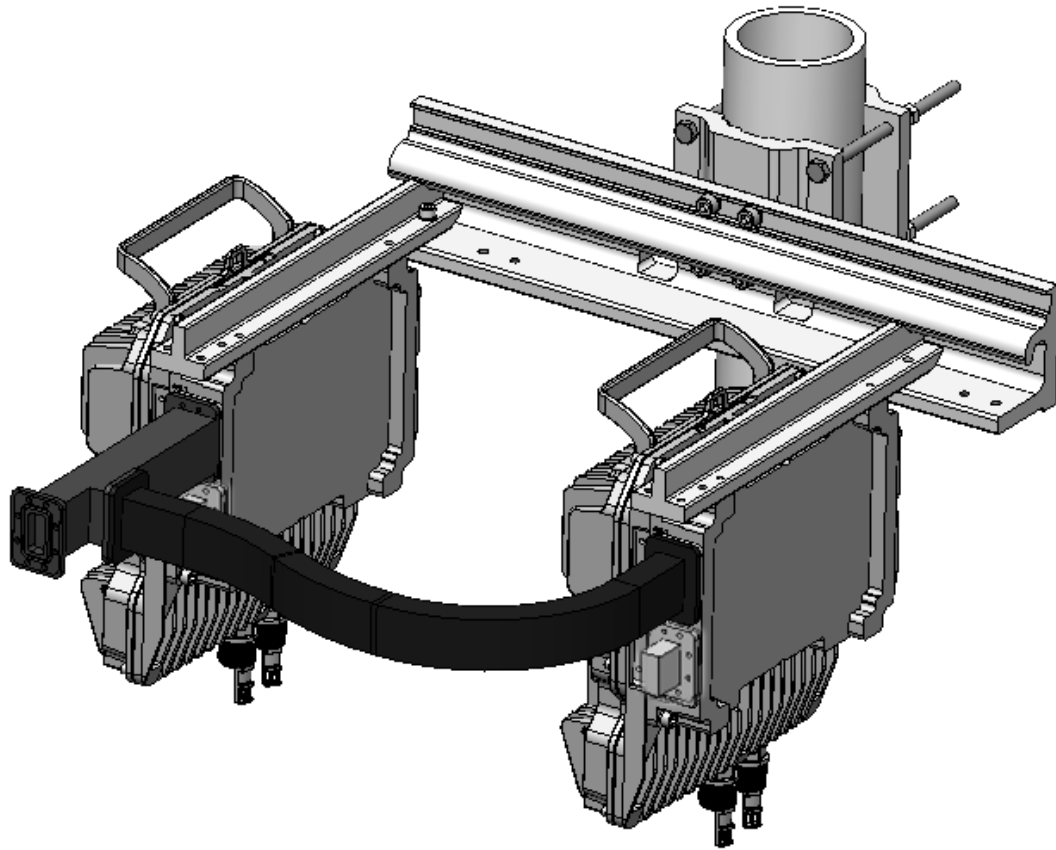
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	2	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	6	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Coupler Kit	1	FXDH-RM-MD-CPLR-06 FXDH-RM-MD-CPLR-7-8 FXDH-RM-MD-CPLR-11
7	Flexible Waveguides	2	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble two OCUs, both using a Left Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 3 On the side of the OCU facing the pole, attach a Termination to each of the four radio ports. See Section Chapter 0, *Assembling a Termination*.
- 4 On the side facing away from the pole (refer to the numbering in the figure above):
 - Connect a Coupler to the upper radio port of OCU 1. See Section Chapter 0, *Assembling a Splitter or Coupler for Filter-Based Branching*.
 - Connect a flexible waveguide from the Coupler to the upper radio port of OCU 2.
 - Attach a Termination to each of the lower radio ports. See Section Chapter 0, *Assembling a Termination*.



- 5 Attach a waveguide between the antenna and the Coupler.

2+2 HSB Single Polarization

List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	4	See Section 0, <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability.</p> </div> </div>
Radio Unit			
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>

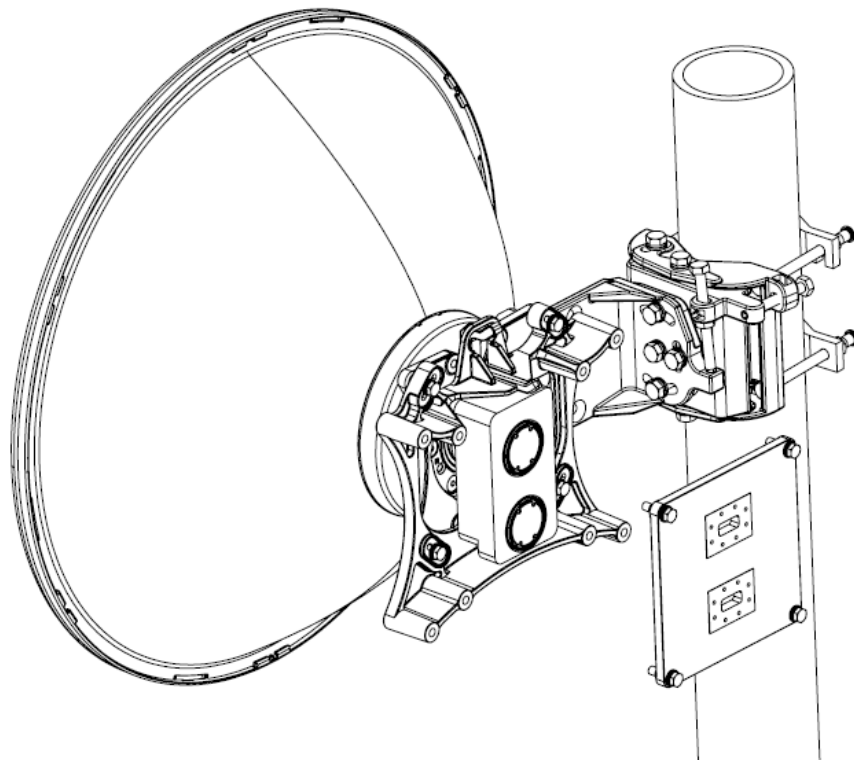
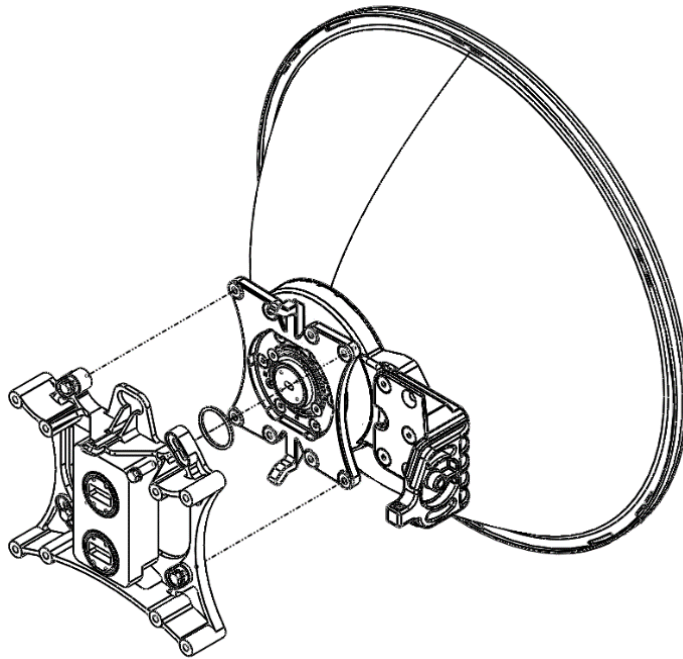
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	4	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	4	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Branching Short U-Bend Kit	4	FXDH-RM-U-Bend-06 FXDH-RM-U-Bend-7-8 FXDH-RM-U-Bend-11
7	RFU-D-HP Splitter Kit	Depends on Configuration	FXDH-RM-MD-SPLTR-06 FXDH-RM-MD-SPLTR-7-8 FXDH-RM-MD-SPLTR-11
8	RFU-D-HP SPLITTER KIT	1	FXDH-RM-MD-SPLTR- <i>ff</i>
9	Flexible Waveguides	2	

Procedure

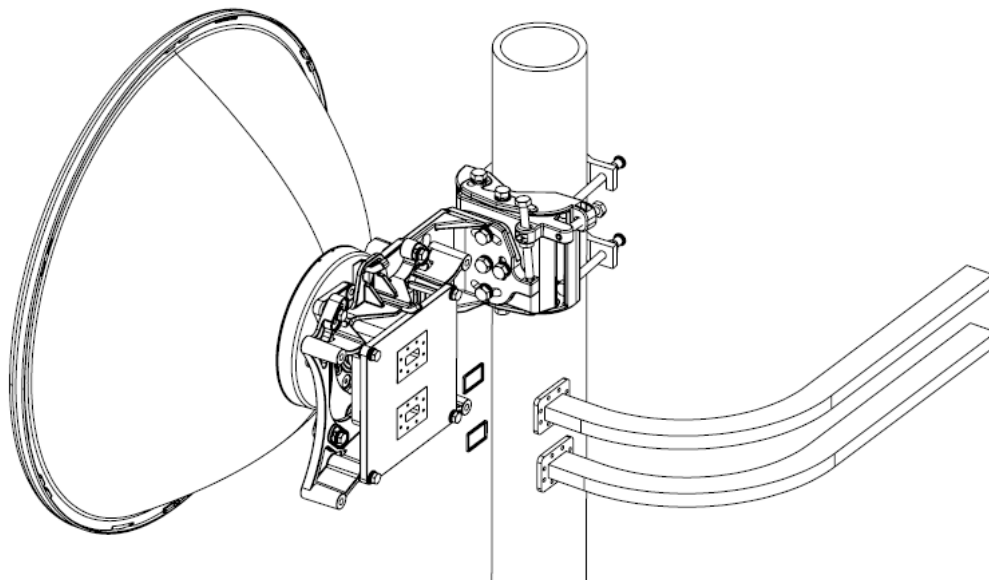
- 1 Prior to the installation, follow the antenna manufacturer’s instructions to use the circular adaptor. (Remove the existing rectangular transition, swap the O-ring, and install the circular transition instead.)



- 2 Connect the OMT Kit to the antenna and secure it with four screws. Verify the existence of the O-ring.
- 3 Mount and tighten the Remote Mount Adapter to the RFU-D-HP OMT ports using the screws supplied with the adapter kit.

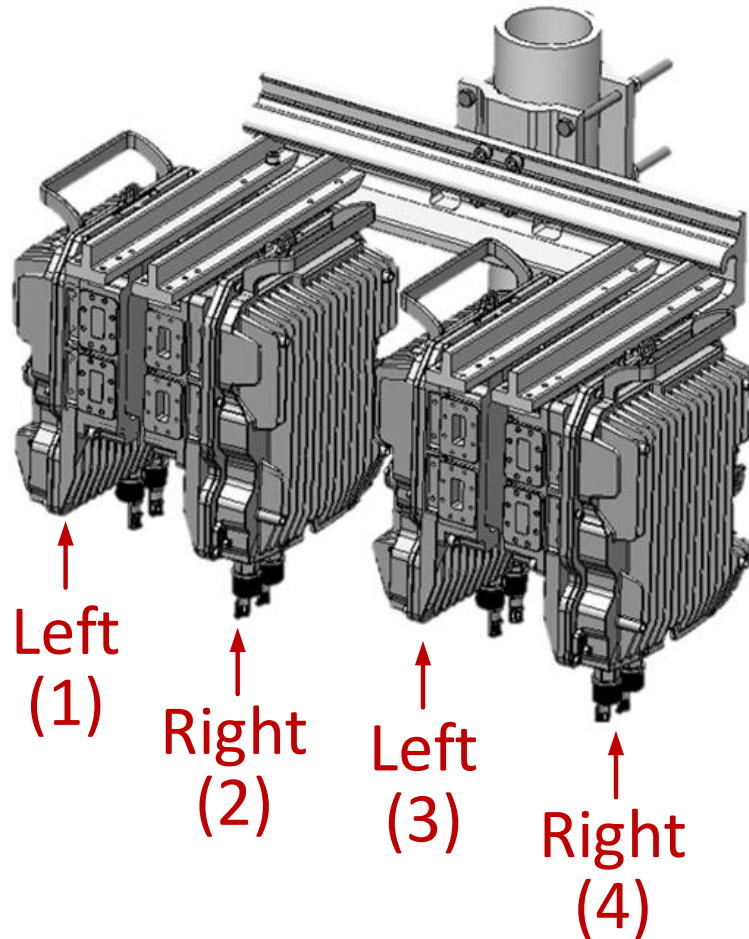


- 4 Mount and tighten the O-ring and the flexible waveguide to the adapter ports using the screws supplied with the flexible waveguide kit.

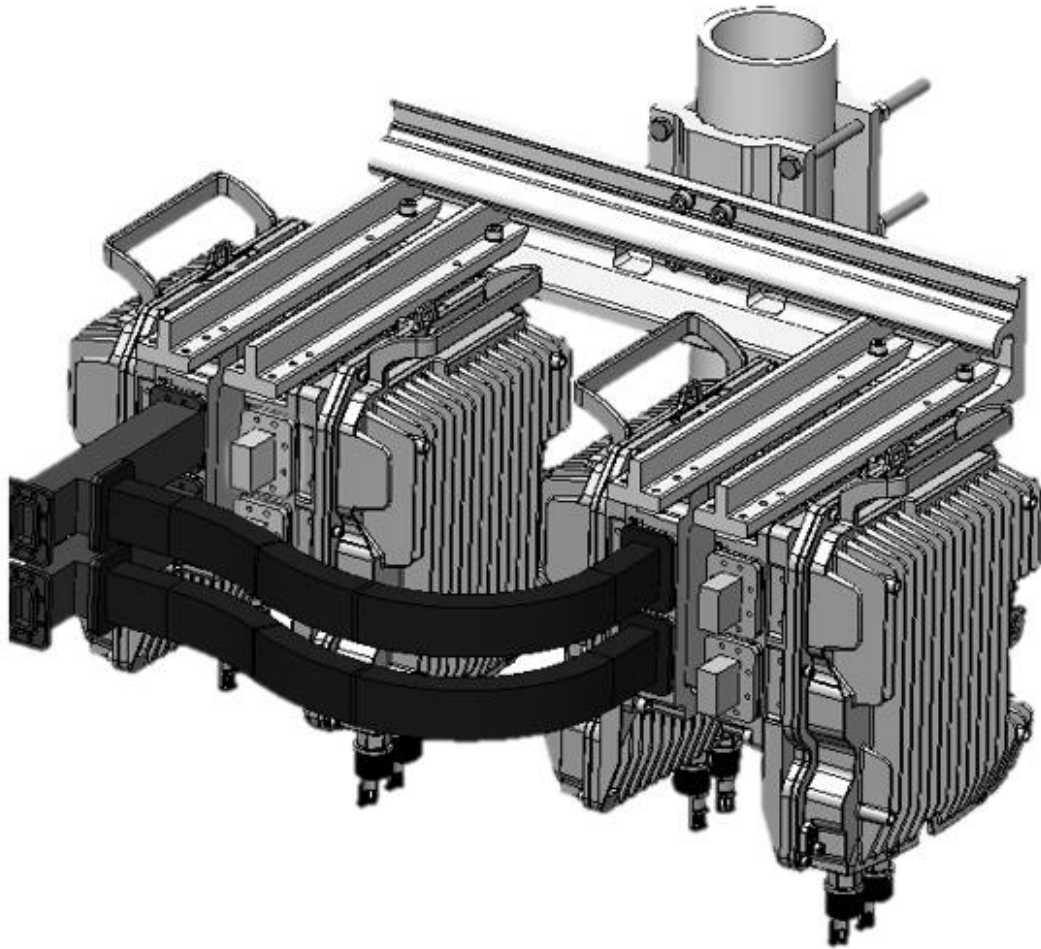


Important: Verify that the O-rings are correctly mounted between the OMT ports and each flexible waveguide.

- 5 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 6 Assemble four OCUs, two using a Left Rail Configuration and two using a Right Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.




- 7 On the side of the OCU facing the pole, for each pair of adjacent OCUs attach two Short U-Bends between the adjacent radio ports. See Section Chapter 0, *Assembling a Short U-Bend*.
- 8 On the side facing away from the pole (refer to the numbering in the figure above):
 - Connect a Splitter to each radio port of OCU 1. See Section Chapter 0, *Assembling a Splitter or Coupler for Filter-Based Branching*.
 - Connect a flexible waveguide from the upper Splitter to the upper radio port of OCU 3.
 - Connect a flexible waveguide from the lower Splitter to the lower radio port of OCU 3.
 - Attach a Termination to each of the radio ports on OCU 2 and OCU 4. See Section Chapter 0, *Assembling a Termination*.



- 9 Attach waveguides between the Splitter connected to the antenna and the Splitters connected to OCU 1.

2+2 HSB Dual Polarization

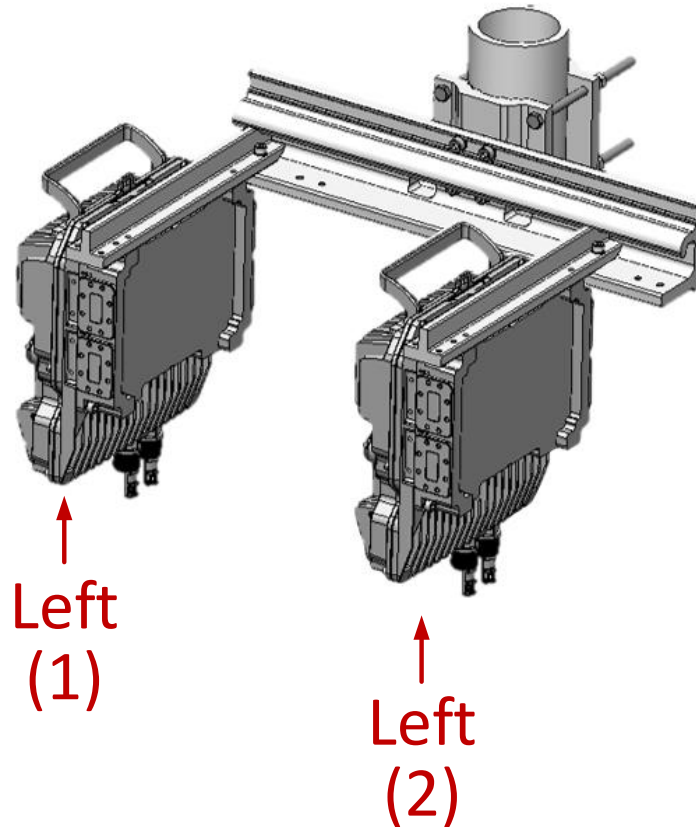
List of Items

Item	Description	Quantity	
1	RFU-D-HP Radio Unit	2	<p>See Section 0,</p> <div style="display: flex; align-items: center;">  <div style="background-color: #e1f5fe; padding: 10px; border: 1px solid #ccc;"> <p>Note!</p> <p>Refer to the product roadmap for availability of RFU-D-HP in a specific band, as well as the availability of any specific mediation device.</p> <p>Presenting a specific component in this manual does not indicate that it is available. Please consult with your pre-sales engineer for specific component availability in your region.</p> </div> </div> <p>Radio Unit</p>

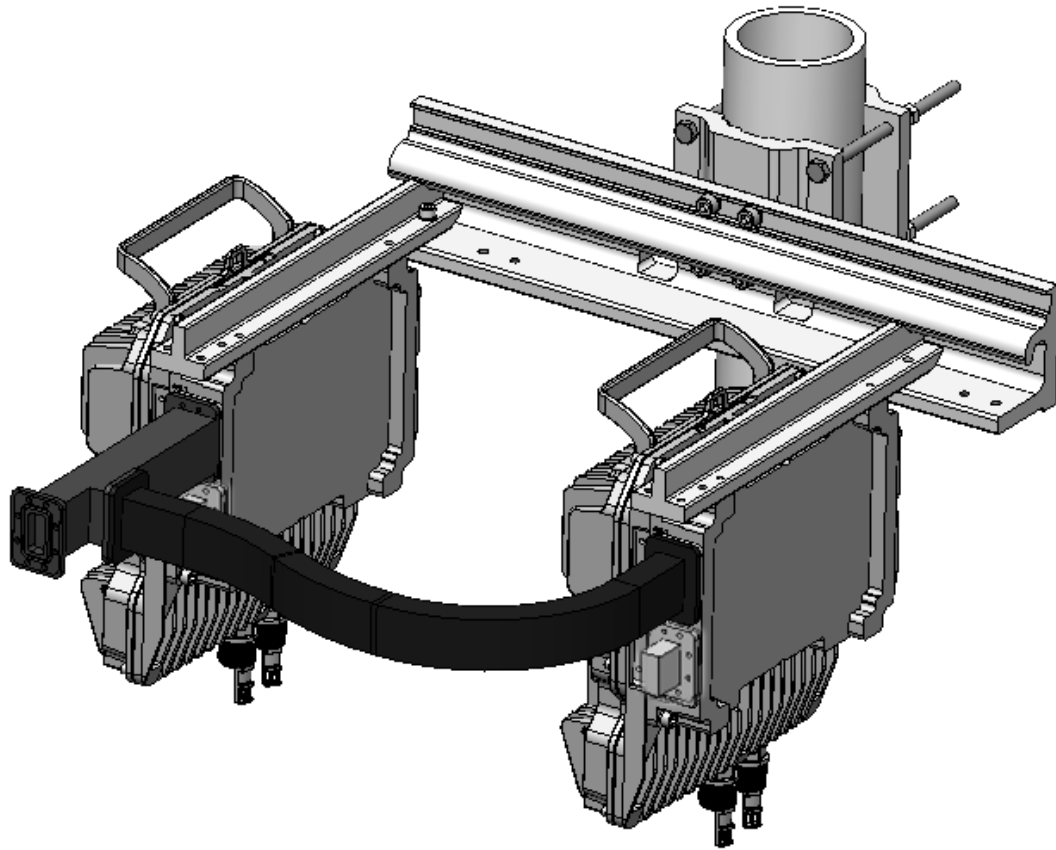
2	RFU-D-HP Branching Pole Profile	1	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
3	RFU-D-HP Branching Pillar	2	Part of OCU Mounting kit, <i>FXDH-RM-MOUNT-kit</i>
4	RFU-D-HP OCU Kit	2	See Section Error! Reference source not found. , Error! Reference source not found.
5	RFU-D-HP Termination Kit	4	FXDH-RM-TERM-06 FXDH-RM-TERM-7-8 FXDH-RM-TERM-11
6	RFU-D-HP Coupler Kit	2	FXDH-RM-MD-CPLR-06 FXDH-RM-MD-CPLR-7-8 FXDH-RM-MD-CPLR-11
7	RFU-D-HP OMT Kit	1	DXDH-MD-OMT-ff
8	Flexible Waveguides	2	

Procedure

- 1 Assemble the OCU Mounting Kit. See Section Chapter 0, *Assembling the OCU Mounting Kit*.
- 2 Assemble two OCUs, both using a Left Rail Configuration. Attach an RFU-D-HP radio to each OCU, and connect the radio-OCU assemblies to the Branching Pole Profile as shown in the following figure. See Section Chapter 0, *Assembling the OCU*.



- 3 Connect the OMT to the antenna. See Steps 1-4 in Section Chapter 0, *2+0 Dual Polarization Remote Mount*.
- 4 On the side of the OCU facing the pole, attach a Termination to each of the four radio ports. See Section Chapter 0, *Assembling a Termination*.
- 5 On the side facing away from the pole (refer to the numbering in the figure above):
 - Connect a Coupler to each radio port of OCU 1. See Section Chapter 0, *Assembling a Splitter or Coupler for Filter-Based Branching*.
 - Connect a flexible waveguide from each Coupler to each radio port of OCU 2.



- 6 Attach a waveguide between the antenna and the Coupler.

Chapter 8 RFU-D-HP LEDs

The RFU-D-HP provides the following LEDs to indicate the status of the unit's interfaces, and the unit as a whole:

- *Electrical GbE Interface (RJ-45) LEDs*
- *Optical GbE Interface (SFP) LED*
- *Status LED*
- *EXT LED*

Electrical GbE Interface (RJ-45) LEDs

There are two Green LEDs on either side of the electrical (RJ-45) interface.

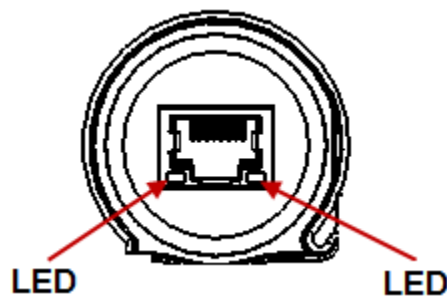


Figure 44: RFU-D-HP LEDs – RJ-45 Interface

The LED on the left indicates the port's Admin state:

- **Off** – Admin is Disabled.
- **Green** – Admin is Enabled.

The LED on the right indicates the interface's Admin and cable connection status, and whether there is traffic on the interface:

- **Off** - Admin is Disabled *or* no cable is connected to the interface.
- **Green** - Admin is Enabled and a cable is connected to the interface.
- **Blinking Green** - Admin is Enabled and a cable is connected to the interface, *and* there is traffic on the interface.

Optical GbE Interface (SFP) LED

There is a single green LED to the upper left of the SFP interface.

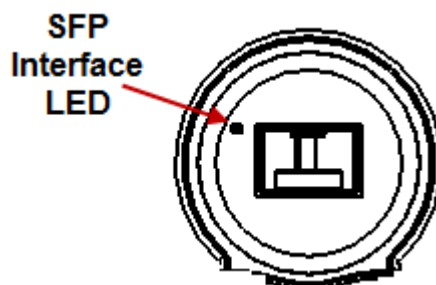


Figure 45: RFU-D-HP LED – SFP Interface

The SFP LED indicates the interface's Admin and cable connection status, and whether there is traffic on the interface:

- **Off** - Admin is Disabled *or* no cable is connected to the interface.

- **Green** - Admin is Enabled and a cable is connected to the interface.

Unit LEDs

The RFU-D-HP has three LEDs that indicate the status of the radio link and the unit as a whole: Status, Radio, and EXT.

Status LED

The Status LED indicates the power status of the RFU:

- **Off** – The power is off.
- **Red** - The power is on, the system is in initialization phase, and the link to the IDU is not yet up.
- **Green** - The power is on, and the link to the IDU is up.

Radio LED

The Radio LED indicates the status of the radio link:

- **Off** – The radio is off.
- **Green** - The power is on, and all carriers are operational (up).
- **Red** - A loss of frame (LOF), excessive BER, or signal degraded condition exists in at least one carrier.

EXT LED

Reserved for future use.

Chapter 9 Installing RFU-D-HP on Third-Party Antenna Adaptors

RFU-D-HP can be mounted to third party mediation devices through RFU-D-HP mediation devices (OMT/Splitter)

Special attention must be taken in assembling these configurations, since most of the 3rd party adaptors can be used only for single polarization configurations

In general, once the correct 3rd party adaptor has been selected and installed on the antenna, the interface now is identical to a generic single pol. RFU-C interface.

The following tables describes available adaptors.

Table 18: Third-Party Antenna Adaptors

Other Vendors Antennas	6GHz	7-8GHz	10-11GHz
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<hr/>			
<hr/>			
<hr/>			
<hr/>			
Kit for converting a ValuLine 3 antenna for integration with RFU-C (ValuLine 3 antennas only). For important information on when these kits can be used, see <i>Special Note on Converting ValuLine 3 Antennas</i> on page 165.	N060082L00 4A	N070082L003A	N110082L003A

Kit for converting a Radiowave HP antenna for integration with RFU-C

N060082L23
5A

PTP82

0 Radiowave
Antenna
Conversion
kit, 6 GHz,
3ft

N060082L23
6A

PTP82

0 Radiowave
Antenna
Conversion
kit, 6 GHz,
4ft

N060082L23
7A

PTP82

0 Radiowave
Antenna
Conversion
kit, 6 GHz,
6ft

N110082L004A
Radiowave Antenna
Conversion kit, 11 GHz, 2ft

N110082L005A
Radiowave Antenna
Conversion kit, 11 GHz, 3ft

N110082L006A
Radiowave Antenna
Conversion kit, 11 GHz, 4ft

N110082L007A
Radiowave Antenna
Conversion kit, 11 GHz, 6ft



Note: For instructions how to install these third-party adaptors, refer to the RFU-C Installation Guide.

Special Note on Converting ValuLine 3 Antennas

Marketing Models for ValuLine 3 antenna conversion kits are valid for most ValuLine 3 antennas, integrated or non-integrated. These conversion kits can also be used to convert Andrew ValuLine 3 antennas with the old Nera Evolution interface to RFU-C. The kits support the majority of Andrew's ValuLine 3 antennas, 1-6ft. However, since there are some unique cases in which Andrew provided special antennas which are not supported by these adaptors, it is recommended that you supply your Cambium Networks representative with a picture of the current antenna (back plain side), in order to confirm the antenna's compatibility prior to implementing this solution.

You can also check the following to determine whether the antenna is compatible with the conversion kit:

- Verify that the antenna is, in fact, a ValuLine 3 antenna.
- Verify that the back plate of the antenna has in its holding plate the six mounting holes shown in red in the figure below.

