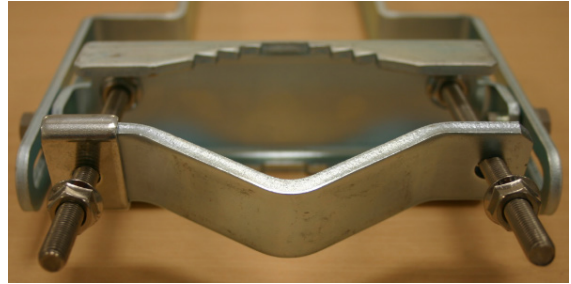


- 8** Attach the rear strap to the upper bracket using (2) serrated flange nuts and (1) retaining bracket. Do not tighten the nuts now.

Figure 59 Rear strap connected to upper AP antenna bracket



- 9** Attach the entire upper bracket to the antenna using (2) hex bolts, (2) flat washers and (2) lock washers. Feed the bolt through the lock washer then flat washer, then thread the bolt into the upper bracket's threaded receptacle.

Figure 60 Assembled upper bracket connected to AP antenna



- 10** Begin assembling the lower bracket by attaching the (2) 7" hex bolts to the bracket using (2) serrated flange nuts

Figure 61 AP Antenna Lower Bracket Assembly



- 11** Attach the rear strap to the bracket using (2) serrated flange nuts and (1) retaining bracket. Do not tighten the nuts now.

Attach the entire lower bracket to the antenna using (2) hex bolts, (2) flat washers and (2) lock washers.

Figure 62 Lower bracket attached to AP antenna



Figure 63 Completed AP and antenna assembly



PMP 450 Series

Assembling the PMP 450 AP antenna

To assemble a PMP 450 Series AP antenna, perform the following steps.

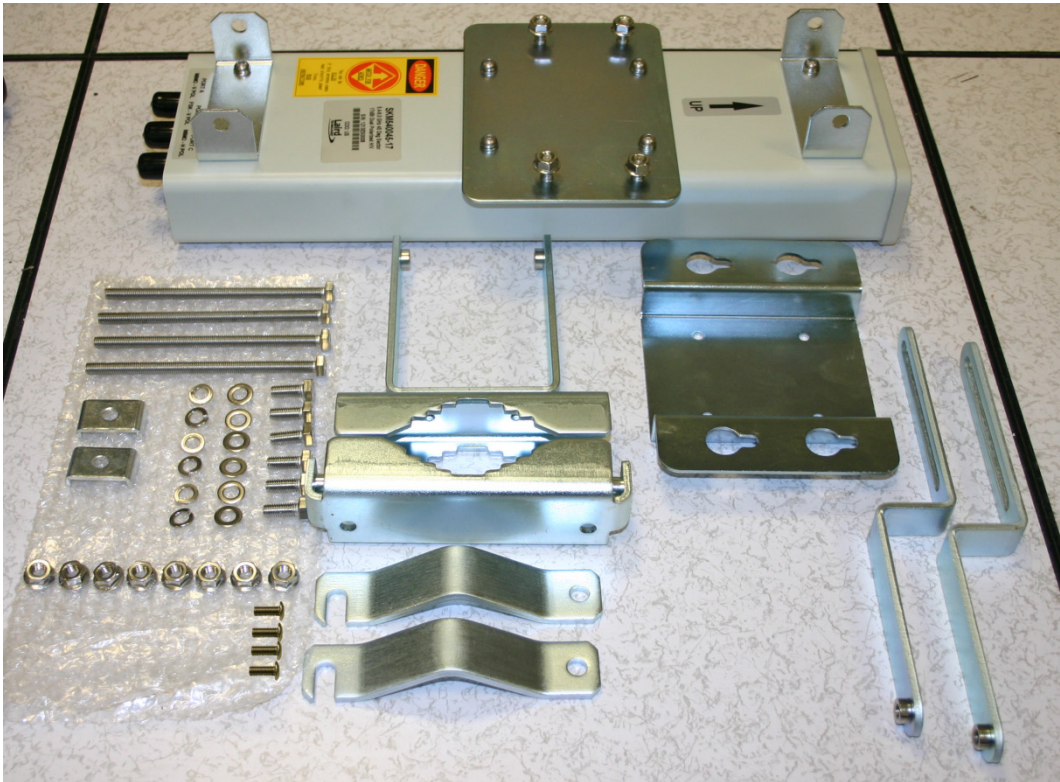


Note

Cambium recommends to assemble the antenna, attach the AP and cabling, and to seal the RF connections before installing the unit at the deployment site.

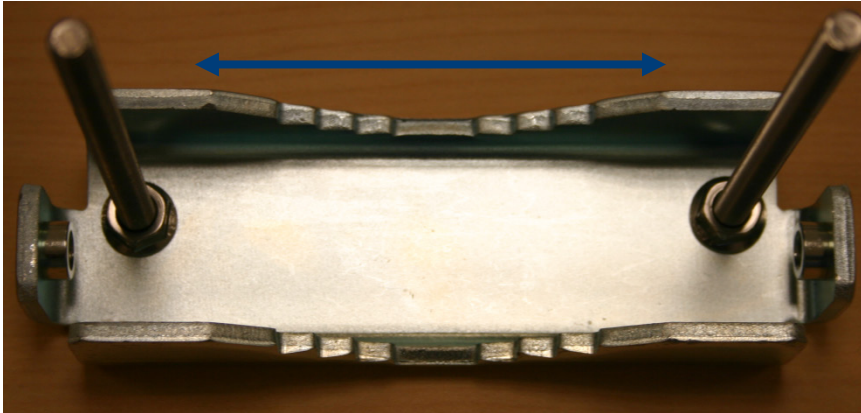
- 1 Inventory the parts to ensure that you have them all before you begin. The full set of parts is shown below.

Figure 64 PMP 450 AP antenna parts



- 2 Begin assembling the upper bracket by attaching the (2) 7" hex bolts to the bracket using (2) serrated flange nuts

Figure 65 AP antenna upper bracket assembly



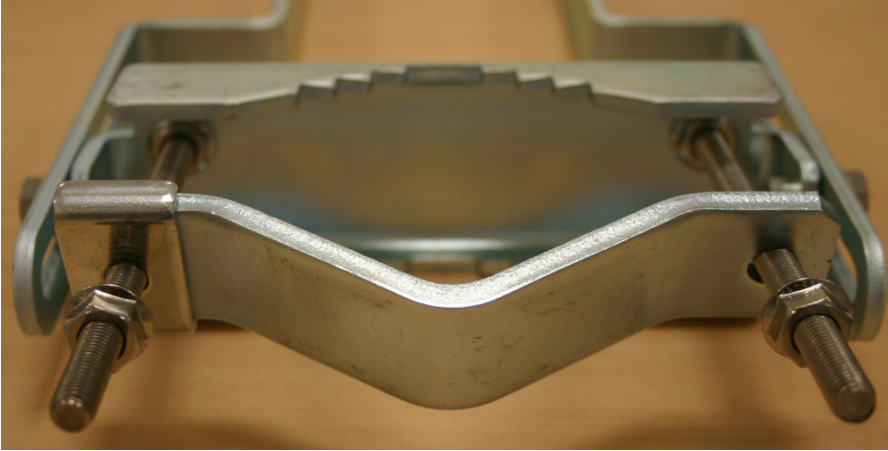
- 3 Attach the upper bracket to the adjustment arms using (2) hex bolts, (2) flat washers and (2) lock washers. Feed the bolt through the lock washer then flat washer, then thread the bolt into the upper bracket's threaded receptacle.

Figure 66 AP antenna upper bracket attached to upper adjustment arms



- 4 Attach the rear strap to the upper bracket using (2) serrated flange nuts and (1) retaining bracket. Do not tighten the nuts now.

Figure 67 Rear strap connected to upper AP antenna bracket



- 5 Attach the entire upper bracket to the antenna using (2) hex bolts, (2) flat washers and (2) lock washers. Feed the bolt through the lock washer then flat washer, then thread the bolt into the upper bracket's threaded receptacle.

Figure 68 Assembled upper bracket connected to AP antenna



- 6** Begin assembling the lower bracket by attaching the (2) 7" hex bolts to the bracket using (2) serrated flange nuts

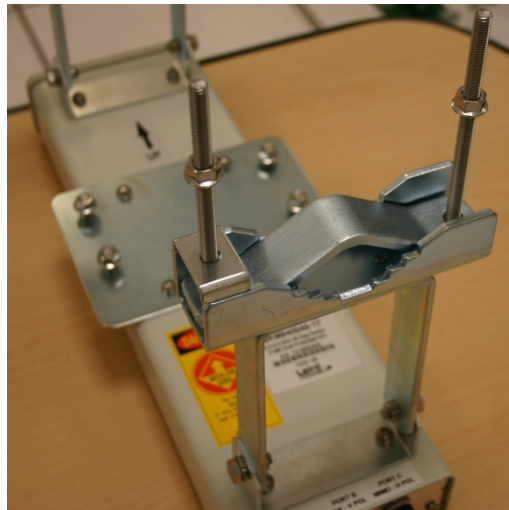
Figure 69 AP Antenna Lower Bracket Assembly



- 7** Attach the rear strap to the bracket using (2) serrated flange nuts and (1) retaining bracket. Do not tighten the nuts now.

Attach the entire lower bracket to the antenna using (2) hex bolts, (2) flat washers and (2) lock washers.

Figure 70 Lower bracket attached to AP antenna



Attaching the PMP 450 AP to the antenna

To attach a PMP 450 Series AP to the antenna, perform the following steps.

**Note**

Use shielded cable for all infrastructure connections associated with APs, SMs, and CMMs. The environment that these modules operate in often has significant unknown or varying RF energy. Operator experience consistently indicates that the additional cost of shielded cables is more than compensated by predictable operation and reduced costs for troubleshooting and support.

- 1 Attach the included bracket to the rear of the AP using the (4) M5 x 7mm bolts

Figure 71 Attaching bracket to the rear of the AP



- 2 Attach the AP to the antenna by sliding the bracket onto the bolts and tighten the (4) serrated flange nuts using a 13 mm spanner wrench.

Figure 72 Lower bracket attached to AP antenna





Note

If using a non-standard antenna, do not cover the equilibrium membrane vent located on the back of the unit.

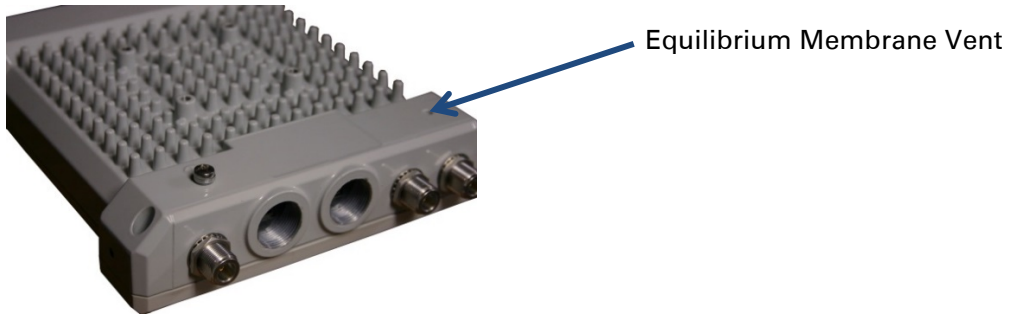


Figure 73 Mounted PMP 450 AP and antenna assembly, viewed from back and back



Attaching the PMP 450 platform AP and antenna to the mount point

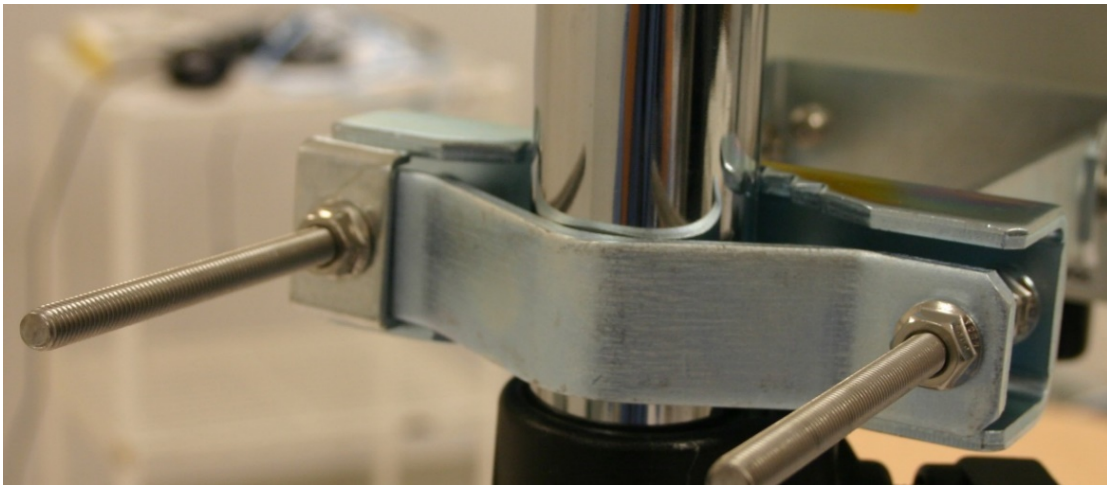
- 1 Attach the upper bracket of the antenna to the mount point by closing the rear strap around the pole and tightening the (2) serrated flange nuts using a 13mm spanner wrench. These must be tightened evenly on the pole to avoid jumping/stripping threads.

Figure 74 Attaching the AP antenna upper bracket to the pole



- 2 Attach the lower bracket of the antenna to the mount point by closing the rear strap around the pole and tightening the (2) serrated flange nuts using a 13mm spanner wrench. These must be tightened evenly on the pole to avoid jumping/stripping threads.

Figure 75 Attaching the AP antenna lower bracket to the pole



- 3 Use a local map, compass, and/or GPS device as needed to determine the direction that one or more APs require to each cover the 90° sector.

4 Choose the best mounting location for your particular application.



Note

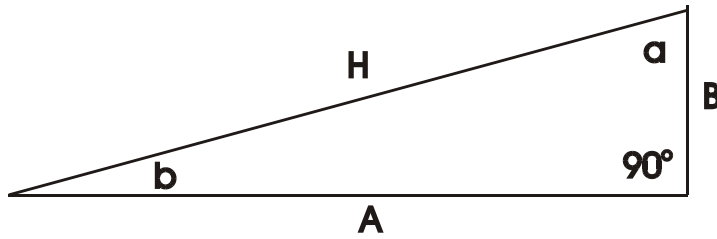
Use the embedded spectrum analyzer or a commercial analyzer to evaluate the frequencies present in various locations. OFDM APs need not be mounted next to each other. They can be distributed throughout a given site. However, the 90° offset must be maintained. If you want to collocate these APs with PMP 100 Series APs of the 5.4-GHz frequency band range, plan to allow at least 25 MHz of separation between their center channels.

5 Secure a ground strap to the ground lug on the back of the AP.

6 Secure the ground strap to the pole, tower, or other trusted ground.

- 7 The bracket of the standard antenna has provision for measured down tilt. The recommended practice is to use one of the many radio analysis and mapping tools or on-line tools to calculate down tilt based on antenna height above the service area. The proper angle of tilt can be calculated as a factor of both the difference in elevation and the distance that the link spans. Even in this case, a plumb line and a protractor can be helpful to ensure the proper tilt. This tilt is typically minimal. The number of degrees to offset (from vertical) the mounting hardware leg of the support tube is equal to the angle of elevation from the lower module to the higher module (<B in the example provided in Figure 40).

Figure 76 Variables for calculating angle of elevation (and depression)

**Where:****Is:**

b	angle of elevation
B	vertical difference in elevation
A	horizontal distance between modules

To use metric units to find the angle of elevation, use the following formula:

$$\tan b = \frac{B}{1000A}$$

Where:**Is:**

B	expressed in meters
A	expressed in kilometers

To use English standard units to find the angle of elevation, use the following formula:

$$\tan b = \frac{B}{5280A}$$

Where:**Is:**

B	expressed in feet
A	expressed in miles

The angle of depression from the higher module is identical to the angle of elevation from the lower module.

- 8** Connect the coax cables to the antenna and to the AP
- 9** Weatherproof the connector on the coax cables (see section [Attaching and weatherproofing an N type connector](#) on page 6-66).

PMP 450i Series 900 MHz AP

Mounting of PMP 450i 900 MHz AP

- 1 Inventory the parts to ensure that you have them all before you begin. The full set of parts is shown in [Figure 78](#).

Figure 77 PMP 450i 900 MHz AP antenna unbox view

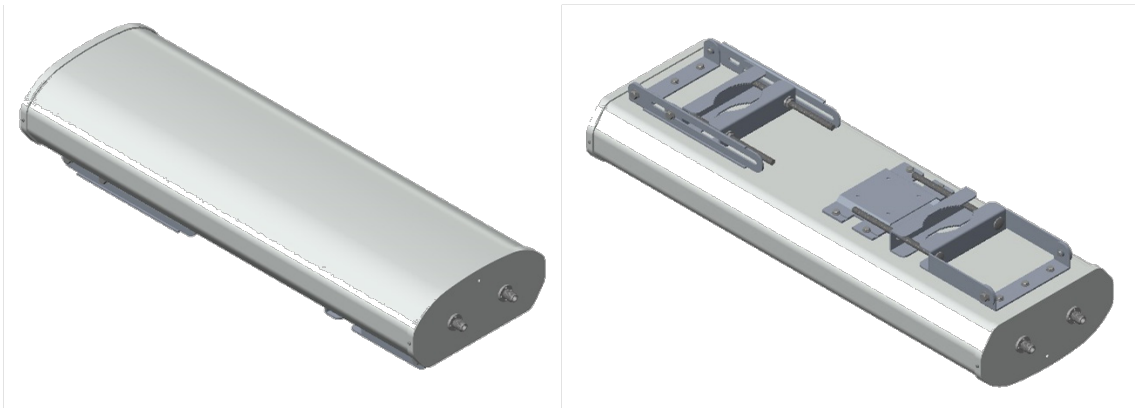
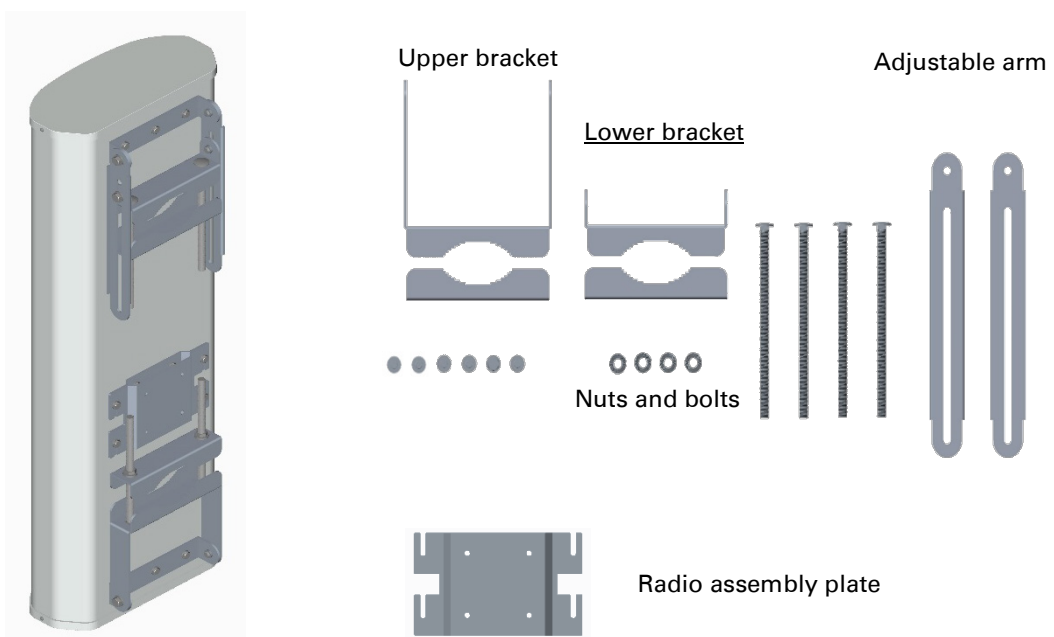
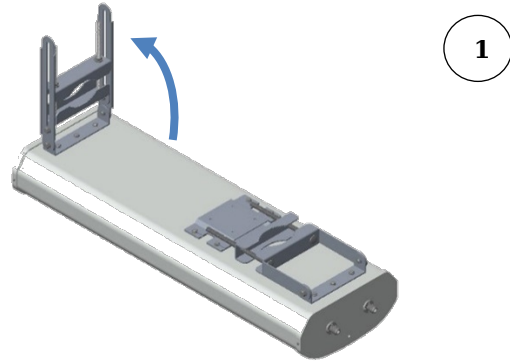


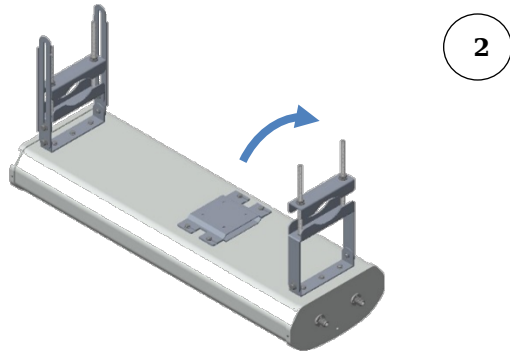
Figure 78 PMP 450i 900 MHz AP antenna inventory



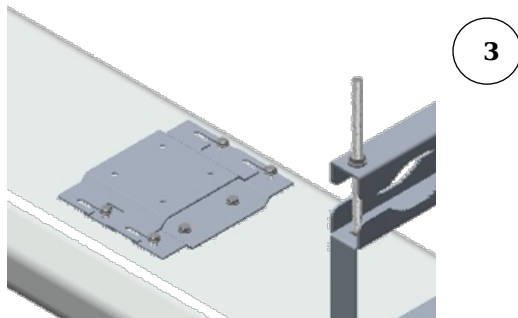
- 2** (1) Unfold the upper bracket assembly of the antenna.



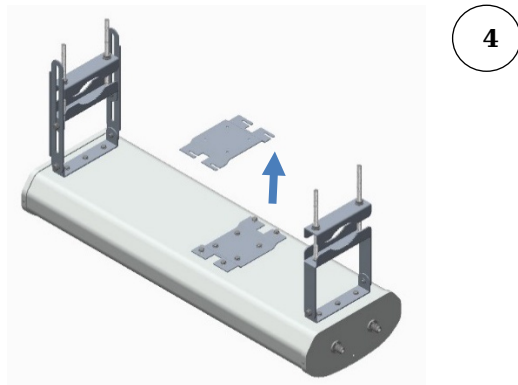
- (2) Unfold the lower bracket assembly.



- (3) Loosen the radio assembly plate by untightening M8 four bolts.



- (4) Remove the radio assembly top plate by sliding towards upper bracket assembly.



- 3** (1) Place the radio assembly plate on the radio and align holes with radio enclosure.

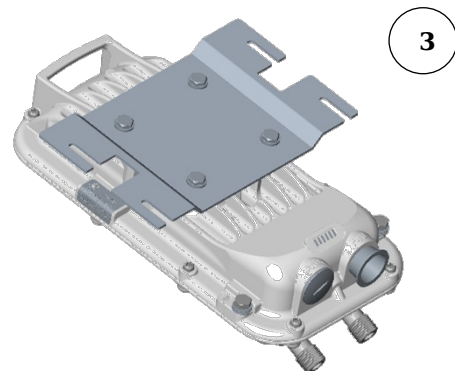
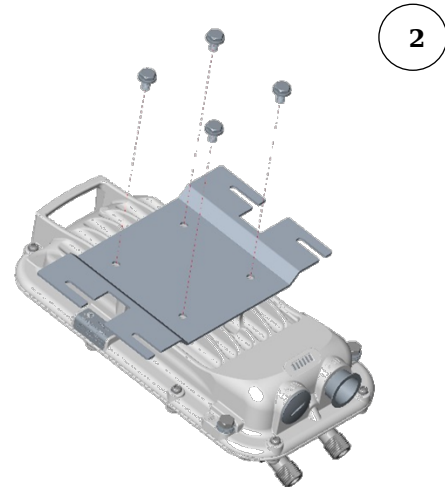
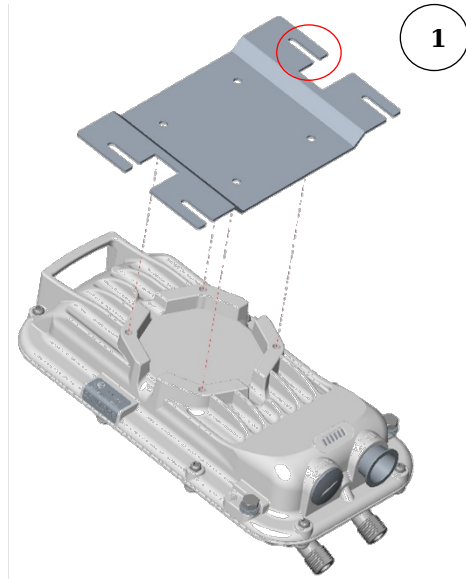


Note

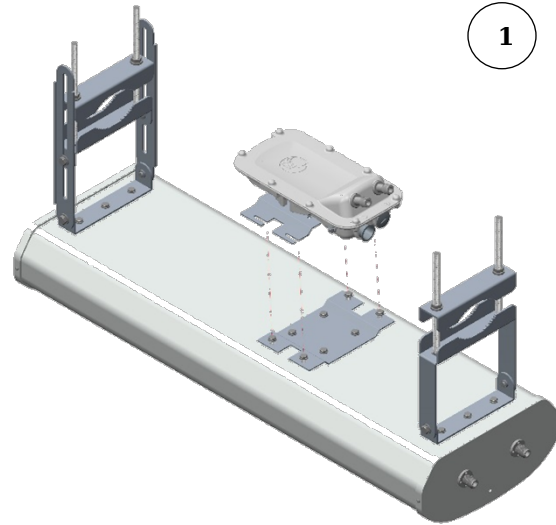
Ensure that the radio plate notch opening and RF port of radio in same direction. It is also important to make sure you attach the radio assembly plate in the proper orientation as shown in figure.

- (2) Insert M8 bolts through plate into radio enclosure

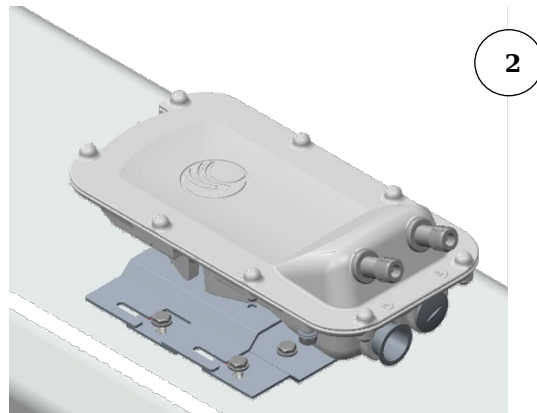
- (3) Fix the plate by tightening four bolts with a torque setting on 2 ± 0.5 Nm



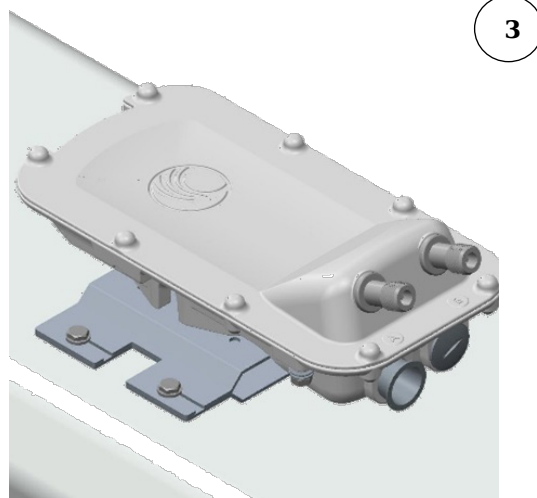
- 4** (1) Place the radio mounted plate on sector antenna as show figure. Ensure that the orination of RF port of antenna and radio are in same direction



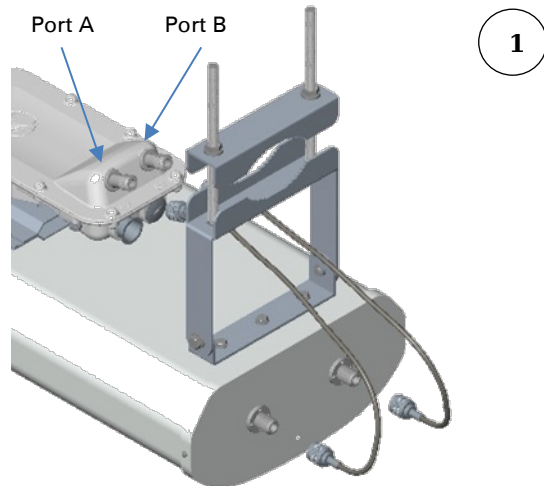
- (2) Line up the radio assembly to four bolts and slide towards lower bracket assembly to lock.



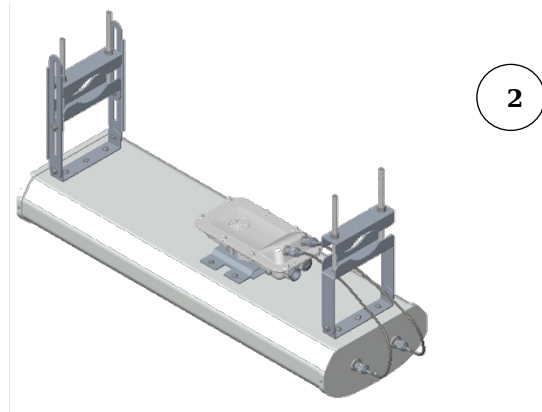
- (3) Tighten the radio assembly plate using four M8 bolts to a torequre setting on 2 ± 0.5 Nm



- 5** (1) Connect the port A of AP to vertical and port B of AP to horizontal polarization interfaces of the antenna with RF cable. Ensure that the RF cables are passthrough inside the lower bracket assembly



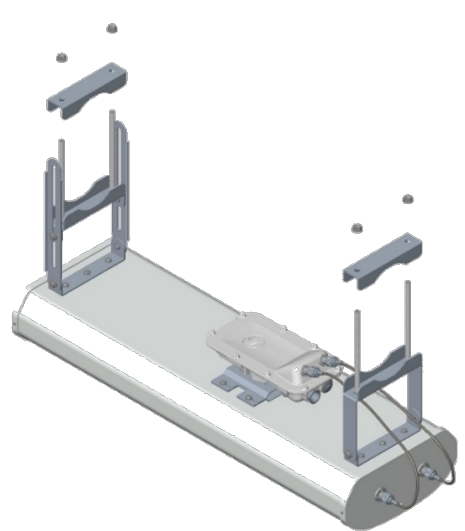
- (2) Hand tighten the N type connectors and the torque should not exceed more than 1 Nm



Mounting of PMP 450i 900 MHz AP antenna to the pole

The mounting procedure of PMP 450i 900 MHz AP and antenna to the pole is given below:

- 1** Remove the upper and lower rear bracket strap from the sector antenna.

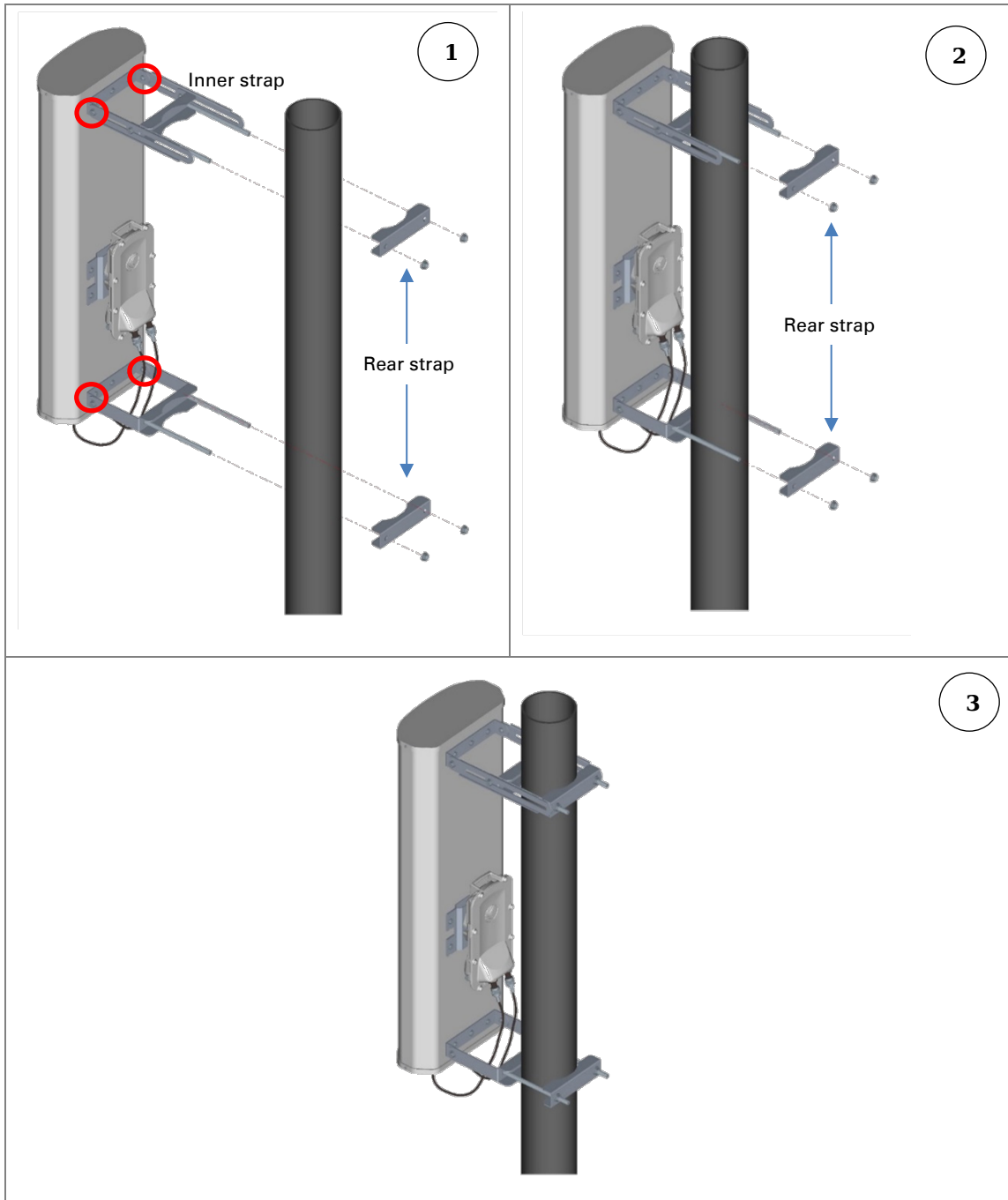


- 2 Attach the upper and lower bracket of the antenna to the mount point by closing the rear strap around the pole.

**Note**

Before mounting the radio on pole, secure upper and lower bracket assembly with a torque setting of 3 to 4 Nm as shown in Figure ①. Also, ensure that inner strap of upper bracket is set to zero degree marking.

Figure 79 Attaching radio mounting PMP 450i 900 MHz AP antenna to the pole



- 3 Tightening the four serrated flange M10 nuts on upper and lower rear strap using a 17 mm spanner wrench. These must be tightened evenly on the pole to avoid jumping/stripping threads



Sector antenna alignment

The 900 MHz sector antenna horizontal and vertical alignment procedure is shown in [Figure 80](#). The antenna can be aligned from +5 to -10 degree by adjusting inner strap of upper bracket assembly.

Figure 80 900 MHz sector antenna alignment

