Enclosure and Intelligent Multiservice Gateways

AT-EN646MOD Enclosure

Installation Guide

613-000731 Rev A

Allied Telesis®

Contents

Chapter 1
Preface

This guide contains instructions on how to install the AT-EN646MOD enclosure. This guide is used when the AT-iMG646MOD series intelligent Multiservice Gateway is installed at an outside location.

Safety Symbols Used in this Document

This document uses the safety symbols defined in Table 1.

Table 1. Safety Symbols

Symbol	Meaning	Description
	Caution	Performing or omitting a specific action may result in equipment damage or loss of data.
	Warning	Performing or omitting a specific action may result in electrical shock.

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The installation and user guides for all Allied Telesis products are available in portable document format (PDF) on our web site at **www.alliedtelesis.com**. You can view the documents online or download them onto a local workstation or server.

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This section provides Allied Telesis contact information for technical support as well as sales and corporate information.

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If you prefer to download new software from the Allied Telesis FTP server from your workstation's command prompt, you will need FTP client software and you must log in to the server. Enter "anonymous" for the user name and your email address for the password.

Chapter 2
Enclosure Overview

Features

The AT-EN646MOD enclosure houses and protects the AT-iMG646MOD series intelligent Multiservice Gateway and is designed to be mounted on the exterior of a house or building. The features of the enclosure include:

- Weather tight casing
- Door that allows limited access to ground plate connections, fiber termination, and console access
- Options for cable entrances
- Fiber splice tray
- Lockable
- Dedicated grommet entries for subscriber wires and service provider cables

Figure 1 illustrates the AT-EN646MOD enclosure.

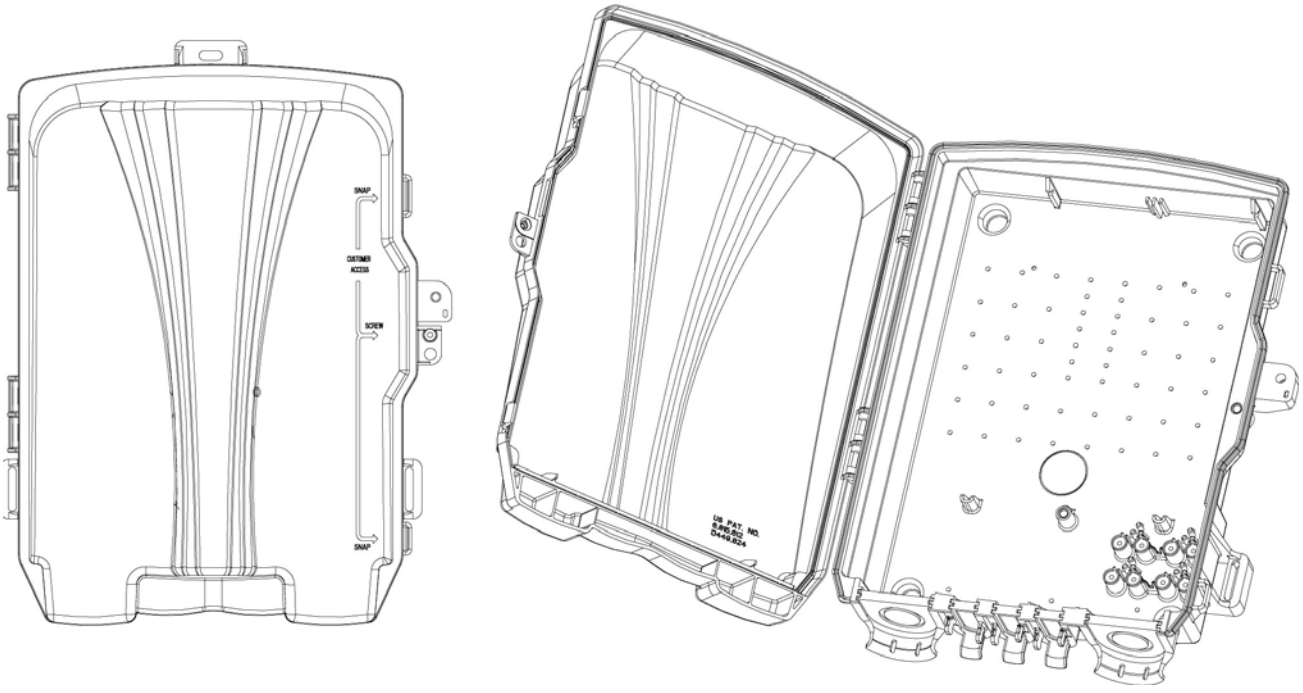

Figure 1. AT-EN646MOD - Closed and Open Door Views

The AT-EN646MOD Interfaces to the Network

The AT-EN646MOD allows the AT-iMG646MOD to be installed in an outdoor environment. Refer to Figure 2.

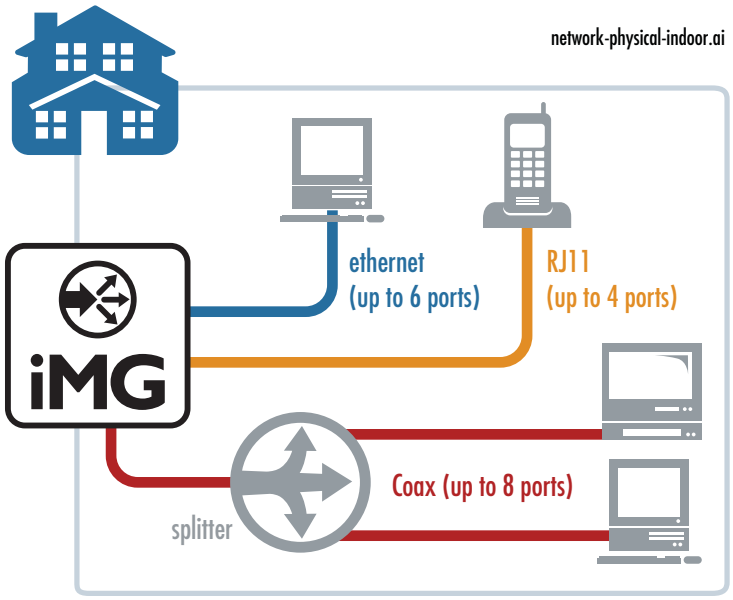

Figure 2. The AT-iMG646MOD installed with Enclosure

The features of the AT-iMG646MOD include:

- Fixed Interfaces
  - 6 RJ-45 LAN ports (10/100 Base-T)
  - 4 Voice ports (FXS)
- Modular WAN Interface Card
  - 100M BD (First Release)
- Modular LAN Interface Card to expand service capabilities
  - Ethernet over Coax (First Release)
  - T1/E1 (2) - Supports PBX termination or cell tower backhaul

Chapter 3

Enclosure Installation

Tools Required

Have the following tools on hand before you install the enclosure:

- ❒ 3/8” drill
- ❒ Drill bit for the size of wall anchor or fastener you intend to use for the enclosure
- ❒ Flat head and #2 Phillips screwdrivers
- ❒ SM fusion splicer and required fiber handling tools
- ❒ 3/8 in. nut driver
- ❒ 5/32 in. hex-pin security screwdriver
- ❒ Pliers

Additional Supplies

You may also need the following supplies:

- ❒ Mounting screws or bolts suitable for the mounting location and material.
- ❒ Silicone sealant
- ❒ Fiber cleaning materials
- ❒ One 1m SC/UPC SM pigtail
- ❒ One SM fusion splice protector
- ❒ One earth ground rod, if not already present
- ❒ 14AWG solid copper ground wire

Check Package Contents

The following items are included in the enclosure package. If any item is missing or damaged, contact your Allied Telesis representative for assistance.

Note
Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

- ❒ AT-EN646MOD Enclosure
- ❒ This Installation Guide
- ❒ First Accessory Kit that includes the ground plate with door
- ❒ Second Accessory Kit that includes the following. (Refer to Figure 3.)
  - – 4 self-tapping screws (2 for the splice tray, 2 for the grounding plate)
  - – Splice tray
  - – Splice clip (one mold with 4 clips, for 2 or 3 mm splice) -

Note
The 2 mm clips are blue, the 3 mm clips are black.

  - – Tie wraps
  - – Fiber clip standoffs (these plug into the grounding plate)
  - – 4 self-adhesive wire clips

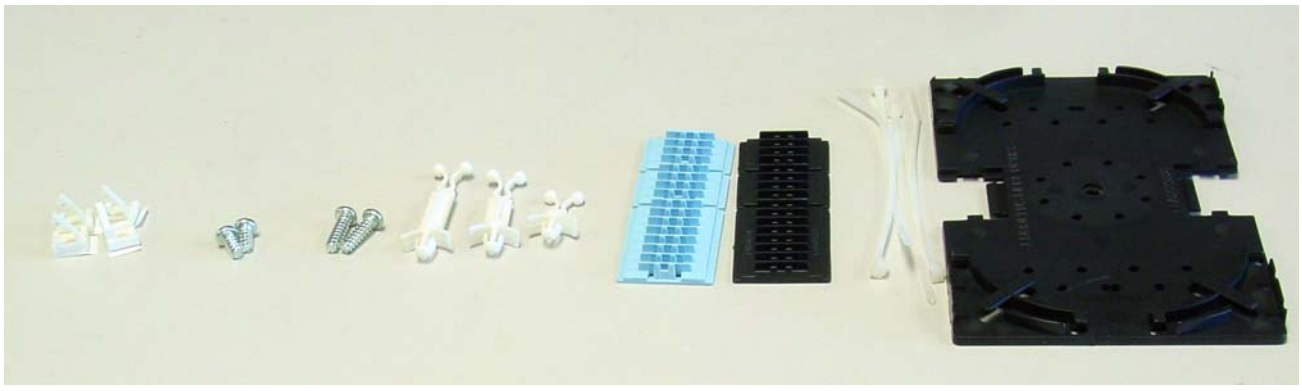

Figure 3. Parts for Accessory Kit (Also includes this Installation Guide)

Mount the Enclosure

To mount the AT-EN646MOD enclosure, perform the following procedure:

1. Remove all components from the shipping package.
2. Choose an outdoor location (indoor mounting is also acceptable) for the enclosure that is close to the power source. The enclosure must be mounted within 50 cable feet of the power supply.
3. Using the enclosure as a template, mark the three mounting holes on the wall, as shown in Figure 4, and prepare a mounting hole in the wall for each opening.

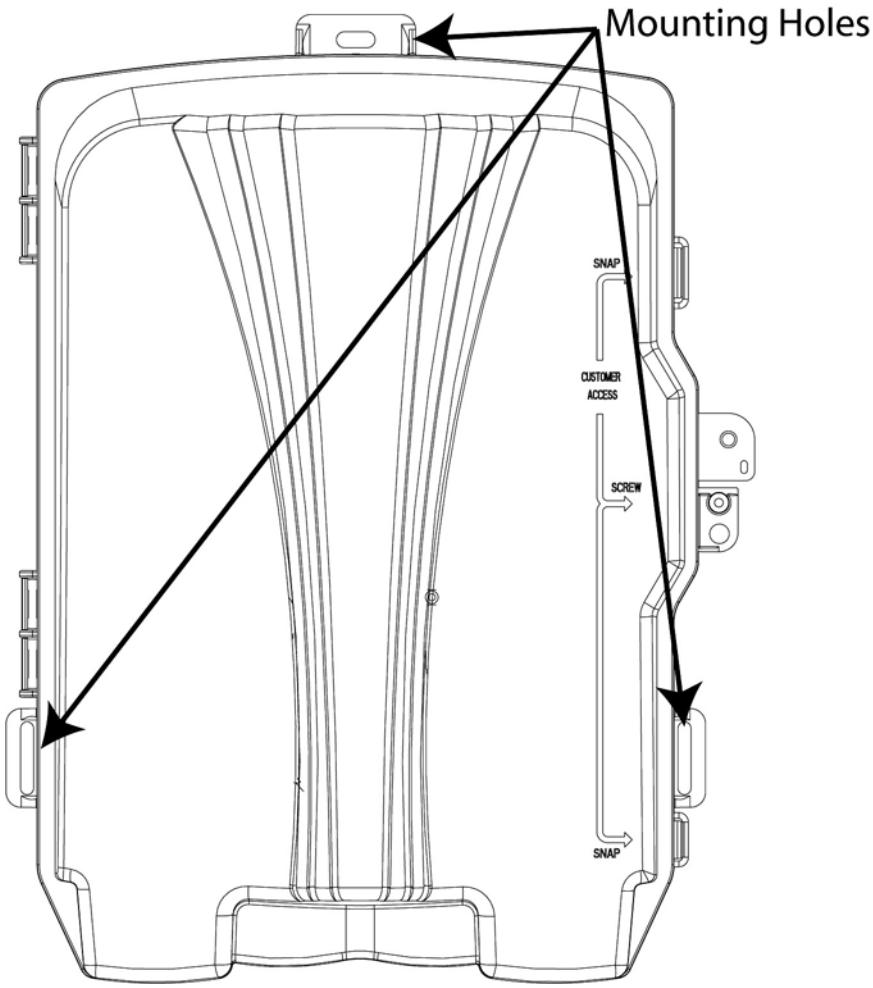

Figure 4. Mounting Hole Locations

4. Use #8 or larger hardware (not provided) to mount the enclosure on the wall.

   Make sure that the enclosure is square to the surface. If it is not, shim with washers to prevent warping.

Install the Grounding Plate

1. Remove the grounding plate and the self-tapping screws from the accessory kit.
2. Review the grounding plate layout, as shown in Figure 5.

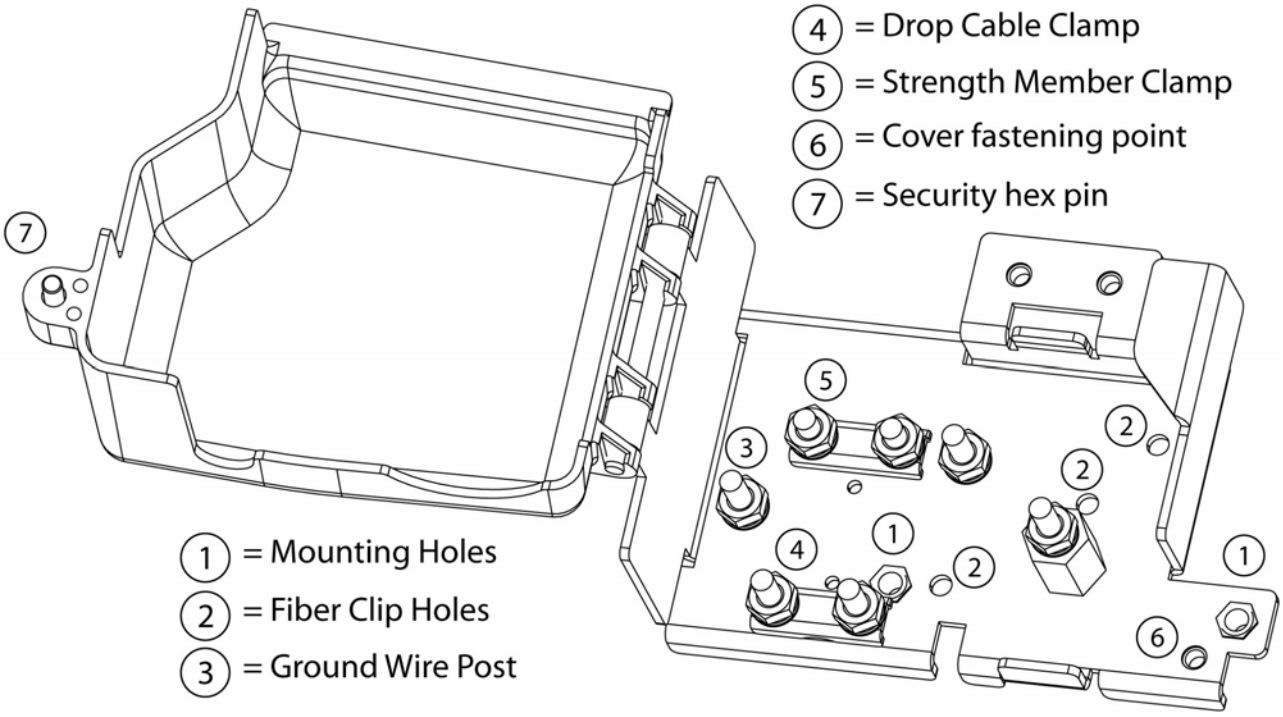

Figure 5. Grounding Plate

3. Align the mounting holes in the grounding plate with the holes in the back of the enclosure, as shown in Figure 6
4. Use the two 14mm self-tapping screw to secure the grounding plate to the enclosure through the mounting hole in the grounding plate.

> **Note**
> Do not overtighten the self-tapping screws.

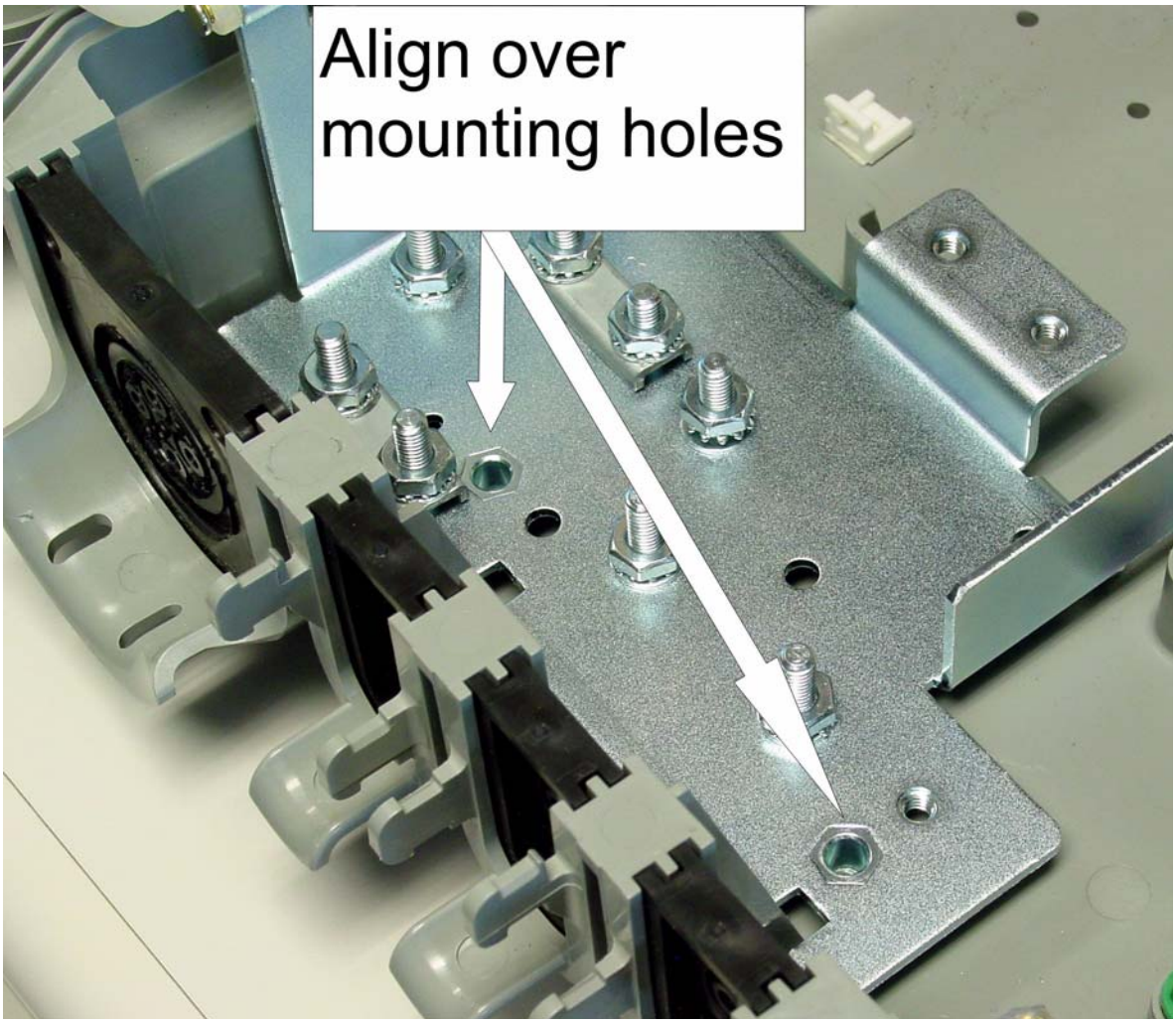

Figure 6. Aligning the Ground Plate

Install the Fiber Clips onto the Grounding Plate

1. From the accessory kit, take out the 3 fiber clips
2. Attach these to the grounding plate so that they are in increasing height, as shown in Figure 7.

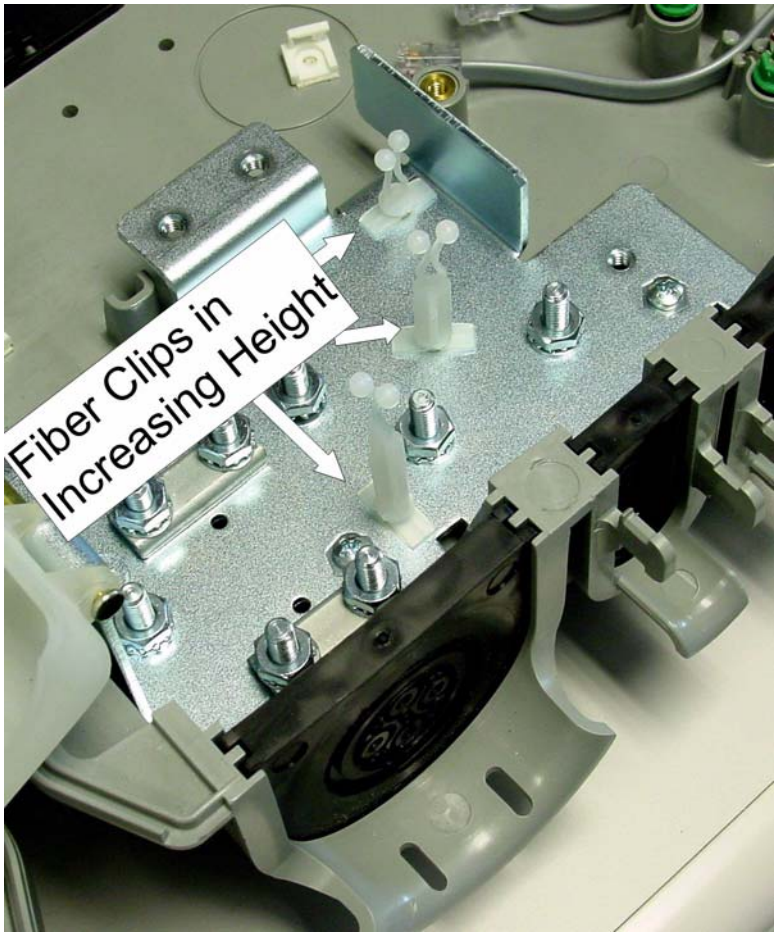

Figure 7. Attaching fiber clips

Option 1 - Install the Dielectric Drop Cable

Securing the Fiber Optic Drop Cable

To install the fiber optic drop cable, perform the following procedure:

1. Locate the fiber optic drop cable and ground wire entrance on the enclosure, as shown in Figure 8.

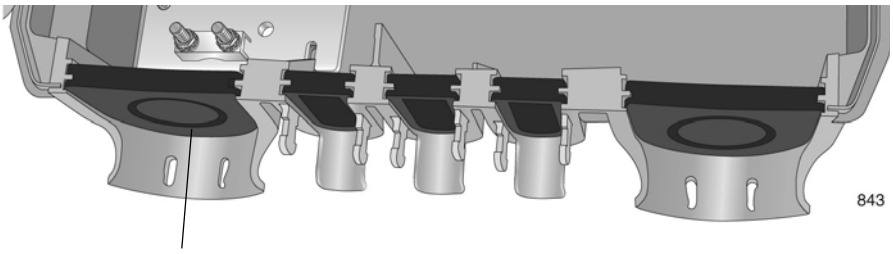

Figure 8. Location of Fiber Optic Drop Cable and Ground Wire Entrance

2. Route the fiber optic drop cable to the enclosure entrance and mark the entrance location on the cable.
3. Cut the cable 42 in. (107 cm) **beyond** this mark.
4. Remove the grommet from the fiber optic drop cable and ground wire entrance.
5. Strip the fiber jacket starting at 1.5 in. (4 cm) beyond the grommet slot where the cable will be coming into the enclosure, per the cable manufacturer's instructions, exposing 40.5 in. (103 cm) of buffer tube.
6. Locate the drop cable clamp on the grounding plate (see Figure 5 on page 12) and remove the Kepnuts, washers, and bar from the posts.
7. Locate the strength member clamp (see Figure 5 on page 12) on the grounding plate and loosen the Kepnuts.
8. Locate the aramid strand and trim it 6 in. (15 cm) from the enclosure entrance.
9. Cut the cable strength member off 3.5 in. (9 cm) from the enclosure entrance.
10. Position the cable so that the strength members go under the strength member clamp and so that the jacket is about 0.25 in. (0.75 cm) beyond the drop cable clamp posts, as shown in Figure 9

Note
Make sure that the fiber optic cable is not secured by either clamp.

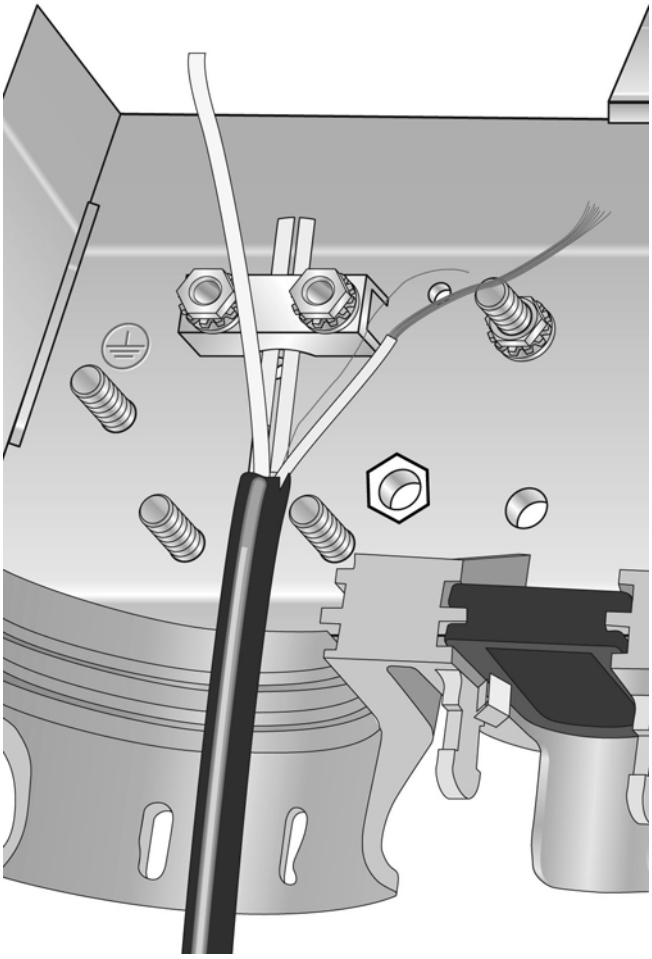

Figure 9. Positioning the Cable

11. Tighten the Kepnuts on the strength member clamp to between 10 and 12 in-lbs to secure the strength members.

12. Replace the bar, washers, and Kepnuts on the posts of the drop cable clamp and tighten the Kepnuts to secure the cable, as shown in Figure 10, to between 10 and 12 in-lbs
    .

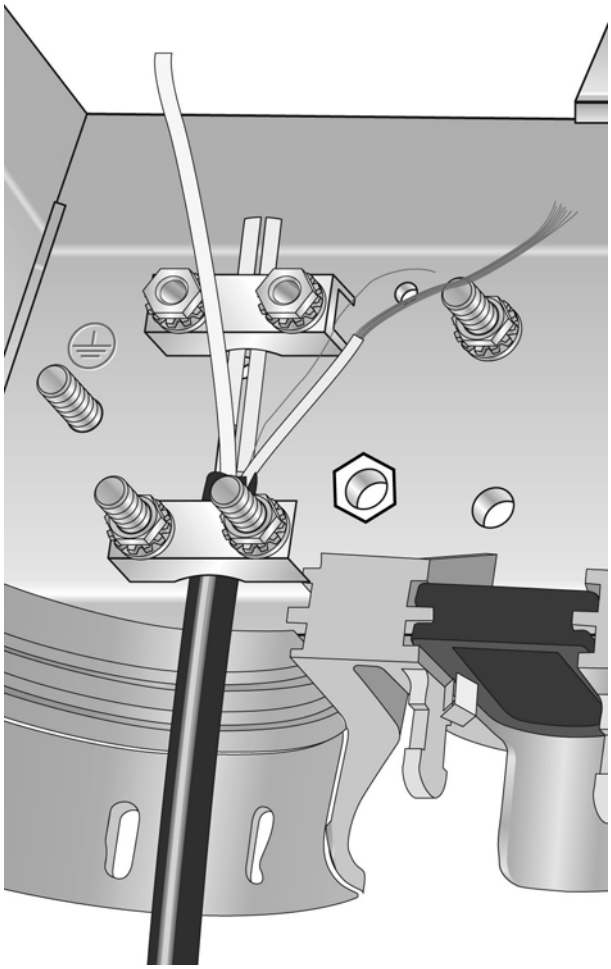

Figure 10. Drop Cable Secured to the Grounding Plate

Install the Ground Wire

The AT-iMG646MOD must be connected to a good earth ground.

Caution
Install all electronics equipment as per state and local ordinances.

To install the ground wire, perform the following procedure:

1. Prepare an adequate length of 14AWG stranded grounding wire for the ground connection.
2. Strip 0.25 in. of insulation from the ground wire and crimp it into a ground wire ring lug sized for a 10-32 post.
3. Remove the Kepnut from the ground wire post.
4. Secure the ground wire ring lug on the ground wire post using the Kepnut, as shown in Figure 11.

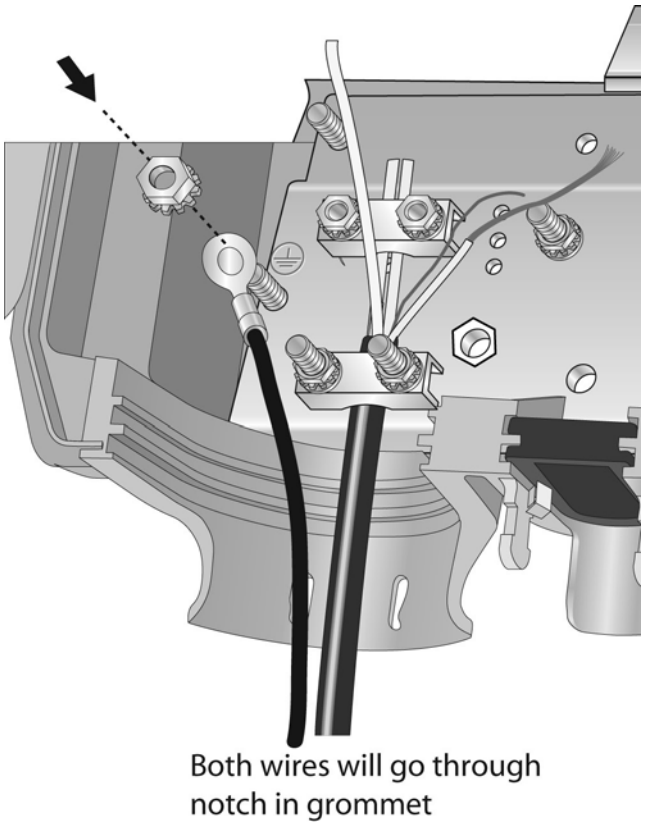

Figure 11. Lining Up the Ground Wire

Secure the Entrance (Replace/Seal the Grommet and Install Tie-Down)

1. Take the grommet that you removed and **cut a notch at the bottom** so that the optical and ground wire can go through when the grommet is replaced.

2. Place the grommet back (with the notch at the bottom) and **seal the grommet** with tape (not provided) and silicone sealant (not provided). Refer to Figure 12.

> **Caution**
> The grommet must be sealed so that the unit can operate correctly in an outside environment.

3. Insert a UV-rated wire tie (not provided) through the slots at the bottom of the entrance as shown in Figure 12.

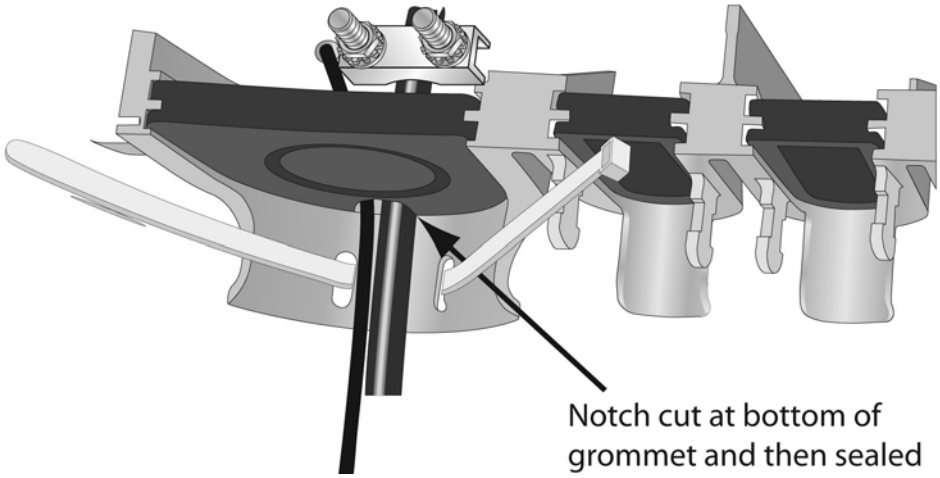

Figure 12. Sealing Grommet and Inserting Tie-Down

4. Secure the fiber cable and ground wire to the enclosure by wrapping the wire tie around the cords and cutting off the excess wire tie.

Connect to Ground

1. Connect the other end of the ground wire to the building's grounding electrode, according to local and national electrical codes.

> All Countries: Install product in accordance with local and National Electrical Codes. 10

Secure the Tracer Wire and Aramid Yarn

Note
Any tracer wire or cable armoring on the fiber optic drop cable must be connected to the grounding plate.

Follow the procedure below to secure the drop cable tracer wire.

To secure the drop cable tracer wire and aramid yarn, perform the following procedure:

1. Cut the tracer wire to 2.5 in. (7 cm) from the grommet.
2. Remove the nut on the tracer wire post.
3. Use a ring lug (26-22 AWG, #10 stud size) to secure the tracer wire to the post.
4. Re-attach the nut removed in Step 2 and tighten on the ring lug, as shown in Figure 13.

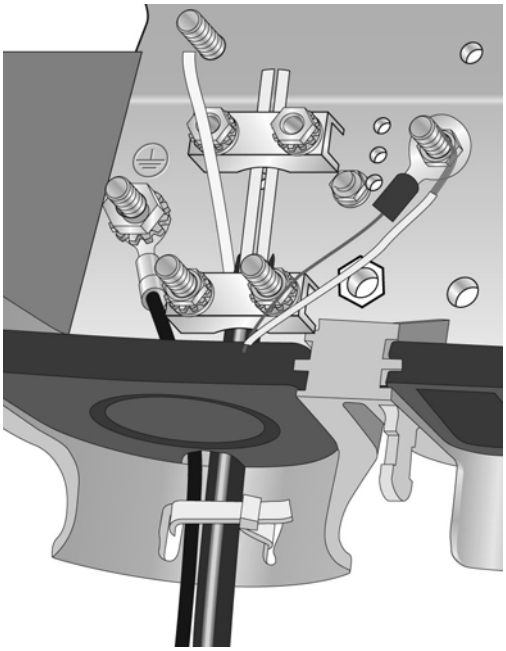

Figure 13. Securing the Tracer Wire and Aramid Yarn

Option 2 - Install the Armored Drop Cable

To install the fiber optic drop cable, perform the following procedure:

1. Locate the fiber optic drop cable and ground wire entrance on the enclosure, as shown in Figure 14.

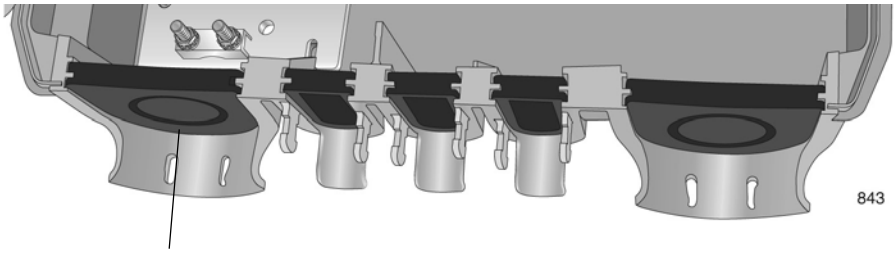

Figure 14. Location of Fiber Optic Drop Cable and Ground Wire Entrance

2. Route the fiber optic drop cable to the enclosure entrance and mark the entrance location on the cable.
3. Cut the cable 42 in. (107 cm) beyond the mark.
4. Remove the grommet from the fiber optic drop cable and ground wire entrance.
5. Remove the strength member clamp including the Kepnuts and bar.
6. Open the shielding to 1.5 in. (4 cm) beyond the grommet slot where the cable will be coming into the enclosure, per the cable manufacturer's instructions, exposing 41 in. (104 cm) of buffer tube.
7. Open out the shielding to expose the buffer tube, as shown in Figure 15.

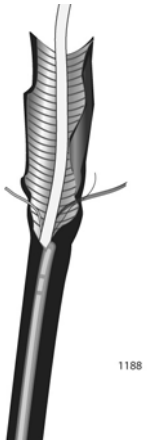

Figure 15. Opening Out the Shielding

8. Locate the drop cable clamp on the grounding plate (see Figure 5 on page 12) and remove the Kepnuts, washers, and bar from the posts.
9. Locate the strength member clamp (see Figure 5 on page 12) on the grounding plate and remove the Kepnuts and bar.

Note
Make sure that the fiber optic cable is not secured by either clamp.

10. Position the cable so that the opened shielding goes under the strength member clamp and the closed portion of the cable is about 0.25 in. (0.7 cm) beyond the drop cable clamp posts as shown in Figure 16

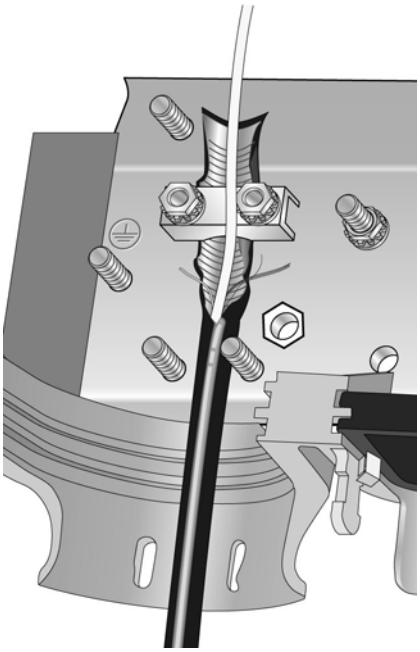

Figure 16. Positioning the Cable

11. Tighten the Kepnuts on the strength member clamp to between 10 and 12 in-lbs to ground the shielding.

12. Replace the bar, washers, and Kepnuts on the posts of the drop cable clamp and tighten the Kepnuts to secure the cable, as shown in Figure 17, to between 10 and 12 in-lbs.

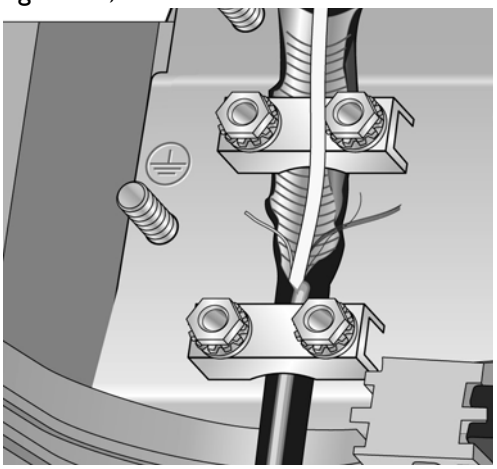

Figure 17. Armored Drop Cable Secured to the Grounding Plate

Install the Ground Wire

The AT-iMG646MOD must be connected to a good earth ground.

Caution
Install all electronics equipment as per state and local ordinances.

To install the ground wire, perform the following procedure:

1. Prepare an adequate length of 14AWG stranded grounding wire for the ground connection.

1. Strip 0.25 in. (0.7 cm) of insulation from the ground wire and crimp it into a ground wire ring lug sized for a 10-32 post.

2. Remove the Kepnut from the ground wire post.

3. Secure the ground wire ring lug on the ground wire post using the Kepnut, as shown in Figure 18.

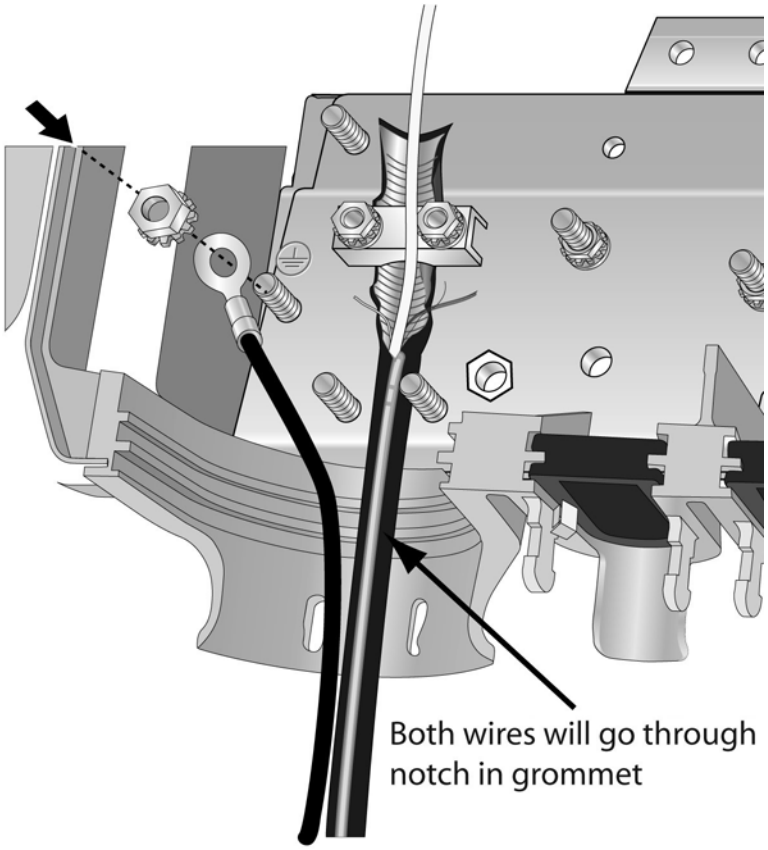

Figure 18. Lining Up the Ground Wire

Secure the Entrance (Replace/Seal the Grommet and Install Tie-Down)

1. Take the grommet that you removed and **cut a notch at the bottom** so that the drop and ground wire can go through when the grommet is replaced.

2. Place the grommet back (with the notch at the bottom) and **seal the grommet** with tape (not provided) and silicone sealant (not provided). Refer to Figure 19.

Caution
The grommet must be sealed so that the unit can operate correctly in an outside environment.

3. Insert a UV-rated wire tie (not provided) through the slots at the bottom of the entrance as shown in Figure 19.

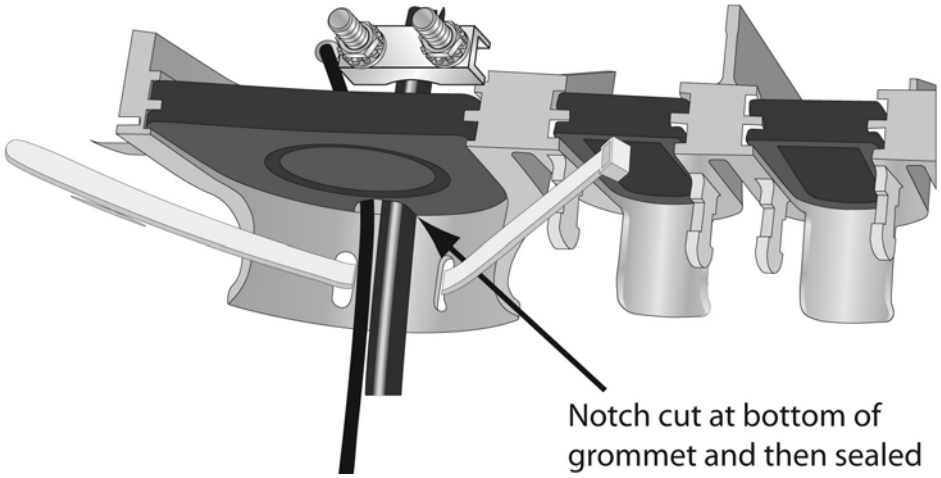

Figure 19. Sealing Grommet and Inserting Tie-Down

4. Secure the fiber cable and ground wire to the enclosure by wrapping the wire tie around the cords and cutting off the excess wire tie.

Connect the Ground

1. Connect the other end of the ground wire to the building's grounding electrode, according to local and national electrical codes.

All Countries: Install product in accordance with local and National Electrical Codes. ✍10

Splice the Drop Cable and Securing the Fusion Splice Tray

1. Locate the fusion splice tray (single-part plastic) and the fiber splice clip in the accessory kit.
2. Select the size of the fiber slice clip you are using (2mm for blue or 3 mm for black).
3. Trim off a 4-section piece and snap this into the splice tray, as shown in Figure 20.

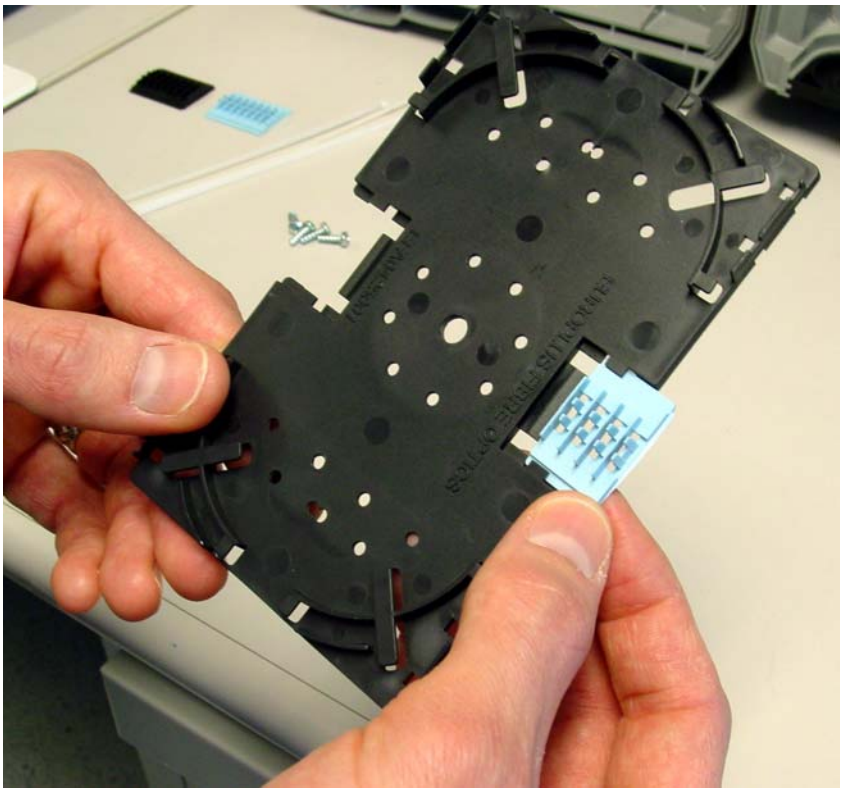

Figure 20. Inserting fiber splice clip

4. Decide where to begin the wire run on the splice tray and in which direction the wire will go around the splice tray.

> **Note**
> In most cases, as shown in the example, the wire should run from the upper left corner and go clockwise.

5. Center the splice tray over the pegboard holes in the enclosure.
6. From the accessory kit, remove the two 8mm screws, and attach the splice tray.
7. Mock up the fiber layout to determine the length of optical wire to use. Wrap the optical wire (at this point the buffer tube) 2 times around the tray, starting with the upper left corner and ending at the top center. Cut the fiber beyond this 2 loop point.

8. Route the buffer tube from the drop cable to the upper left corner of the splice tray and secure the tube to the splice tray with the wire tie.

9. Just beyond the tie, strip the buffer tube away. Refer to Figure 21
.

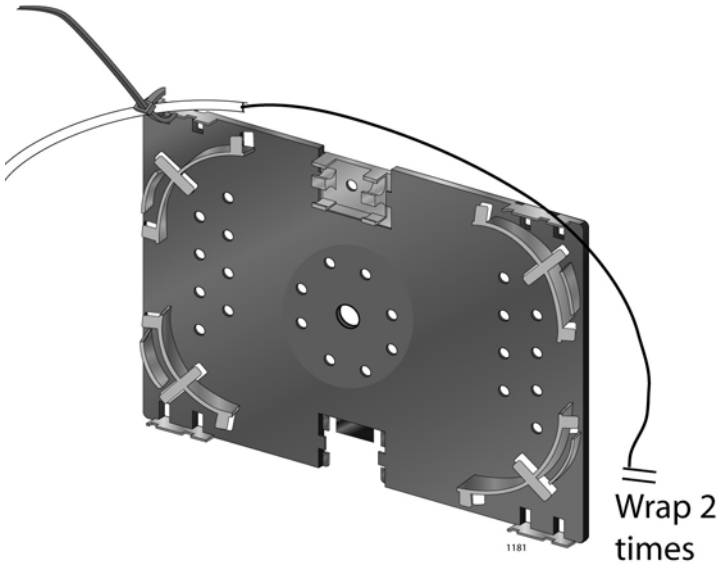

Figure 21. Securing the Buffer Tube

10. Route the fiber cable 2 times around the splice tray to the splice organizer and cut it to a length that will allow the splice to the pigtail be placed in the organizer, as shown in Figure 22.

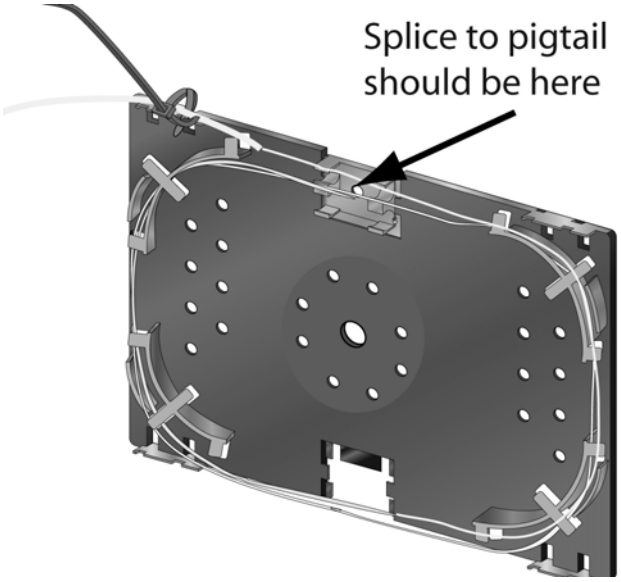

Figure 22. Setting the Fiber Cable in the Splice Tray

11. Cut the SC/UPC pigtail cable (not provided) 30 in. (77 cm) beyond the boot.

12. Strip the SC/UPC pigtail jacket to expose 22.75 in. (58 cm) of fiber.

13. Clean the fiber, and splice it to the pigtail, per the splicer manufacturer's instructions.

14. Route the pigtail once around the splice tray and out through the lower right corner, as shown in Figure 23.

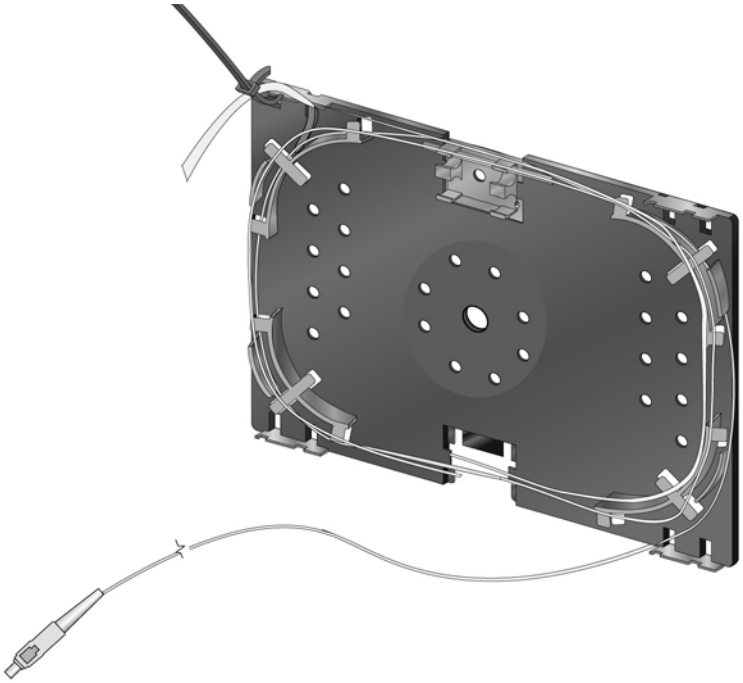

Figure 23. Securing the Pigtail

The pigtail should extend 15.5 in. (40 cm) from the splice tray.

15. Trim the wire tie close to the cables. The completed splice tray should look like Figure 24.

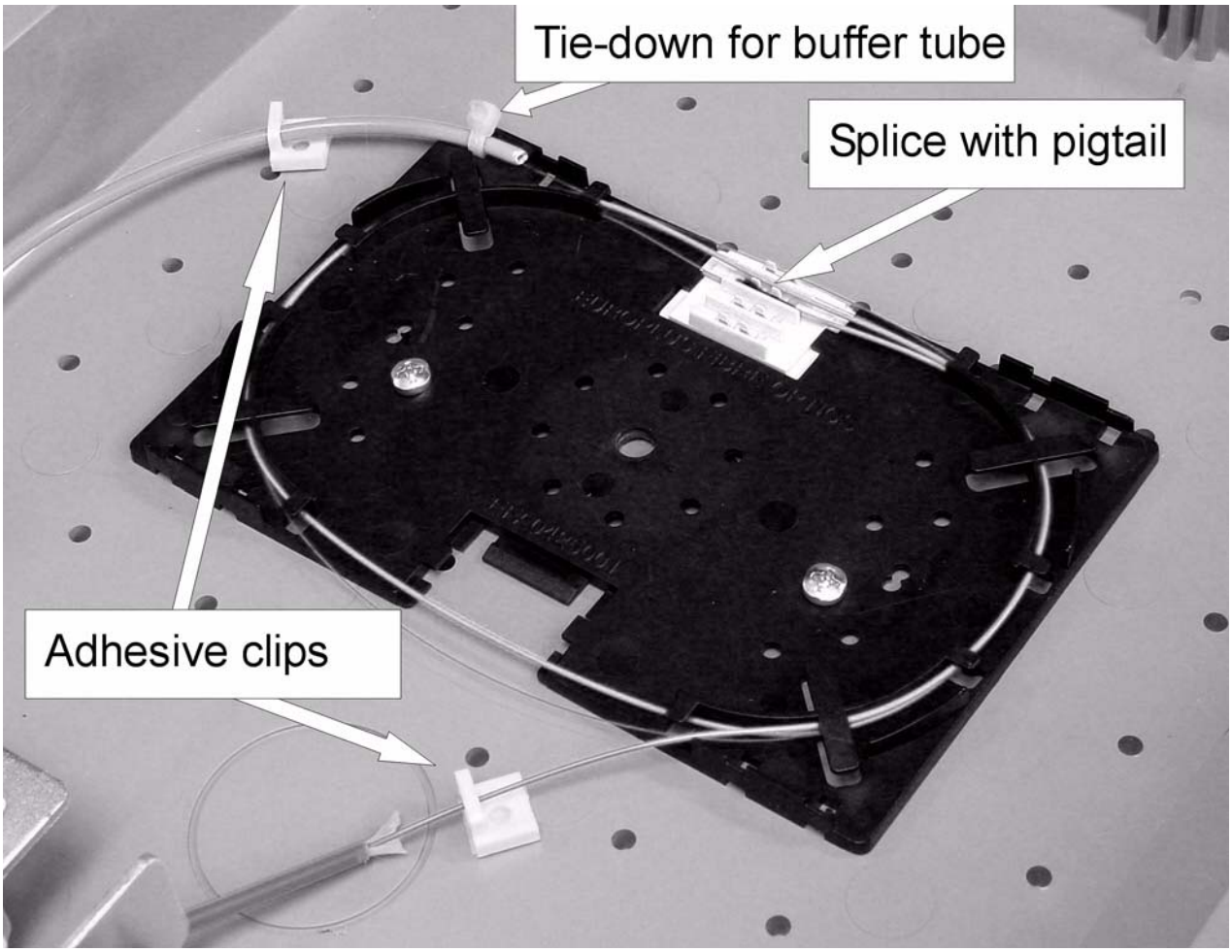

Figure 24. Splicing Tray - Complete

Note

The **AT-iMG646MOD** WAN module has a receive sensitivity of -3 dBm to -32 dBm at 1550 nm. After the fiber pigtail is installed and before you plug the pigtail into the chassis, please check the power of the optical input signal. The power at 1550 nm should fall within the receive sensitivity specification. If the power is too high, an optical attenuator is needed in the link. If the power is too low, you must trace the optical path to determine the cause of the excess loss.

Secure the Optical Wire

Note
It is critical that you maintain a minimum fiber bend radius of 1 in. when you route the fiber optic cables and mount them to the enclosure with the self-adhesive wire clips.

1. Connect the optical fiber and pigtail to the back of the enclosure with adhesive clips, as shown in Figure 25.

2. Place the optical fiber over each fiber clip on the grounding plate, push it down into the clip, and twist to retain the fiber.

3. Ensure the pigtail forms a continuous curve of the same angle through the fiber clips and where it will plug into the iMG646MOD unit. Again, refer to Figure 25

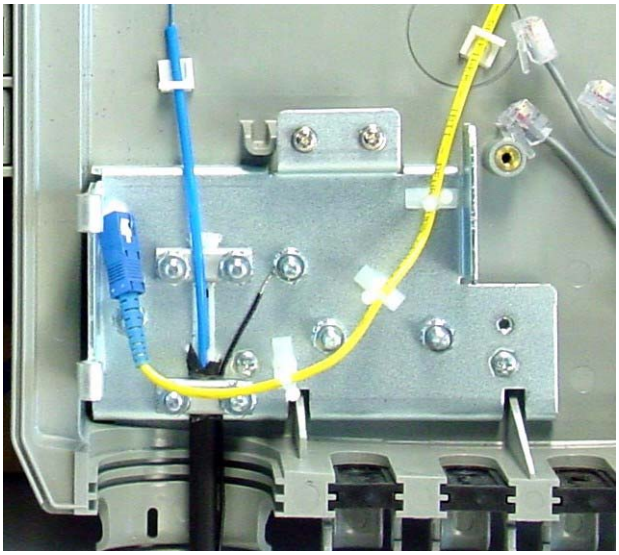

Figure 25. Routing the Optical Wire through the Clips

4. The Enclosure is now complete and should be locked up for later Electronics installation. Refer to Figure 26.

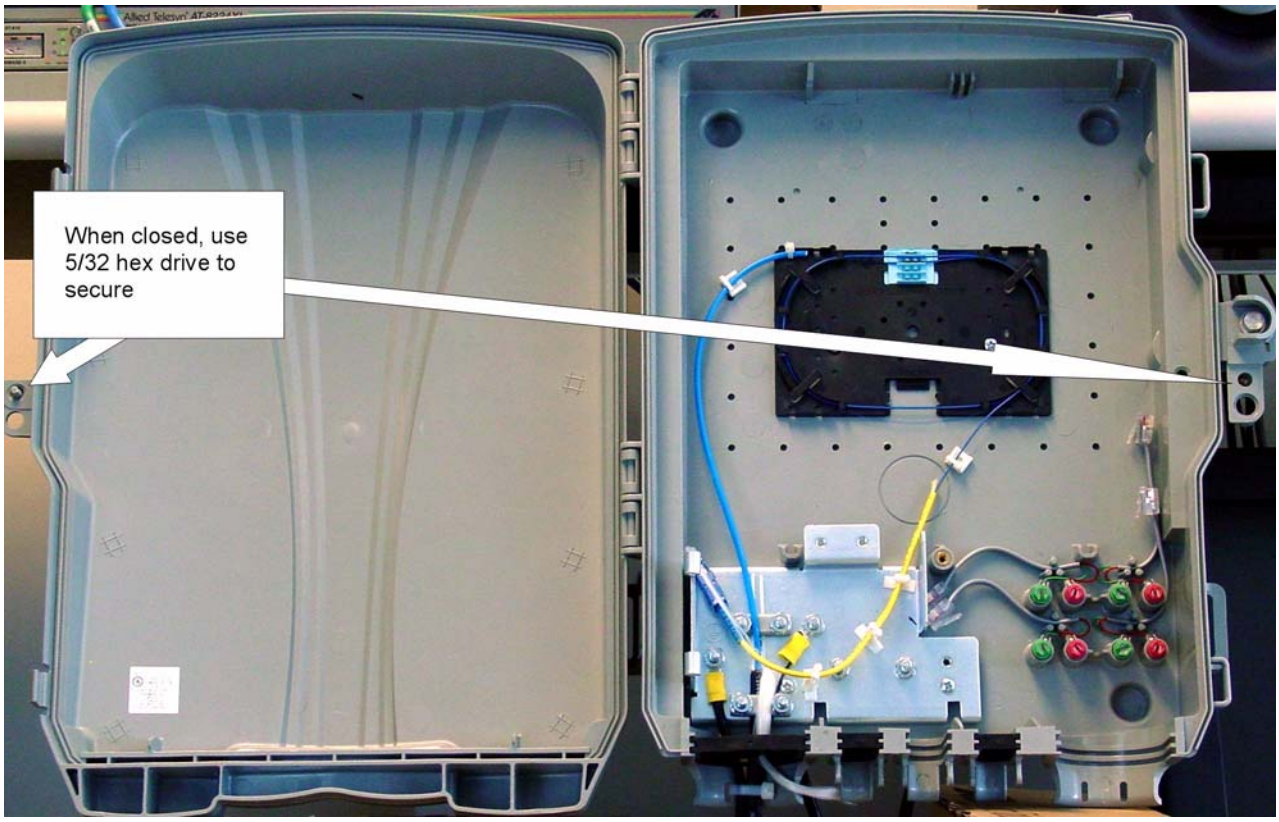

Figure 26. Enclosure Connections at End of Installation

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