End User Modem
Quick Start Guide

Version 1.0B

Contents

— This page is intentionally left blank —

Tables

— This page is intentionally left blank —

Figures

— This page is intentionally left blank —

1 Opening the Box

Before you install the End User Modem (EUM) components, verify that your kit includes the correct items.

Two kits are available. One kit features the EUM components with an optional indoor antenna, and the other kit only includes the EUM components:

EUM with optional antenna:
- Modem (EUM)
- Antenna with attached 3-metre cable
- Flush-mountable antenna bracket
- Two antenna-mount suction cups, two drywall plugs, and two screws
- AC/DC adapter with 2-metre DC power cable
- 2-metre AC power cable
- Crossover Ethernet cable

Basic EUM kit:
- Modem (EUM)
- AC/DC adapter with 2-metre DC power cable
- 2-metre AC power cable
- Crossover Ethernet cable

Refer to Figure 1 for an illustration of each EUM component.
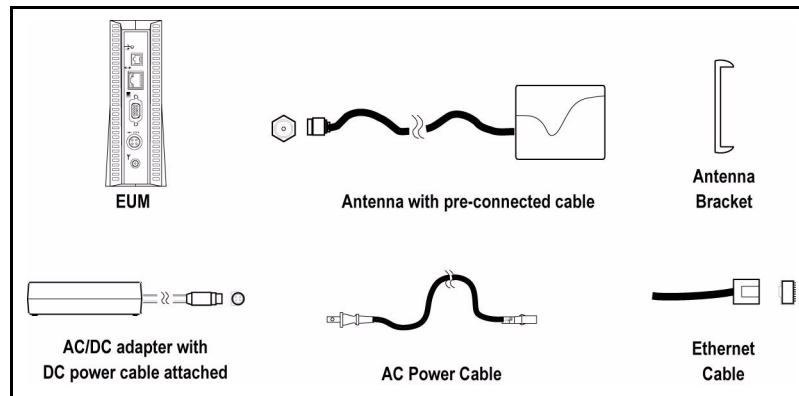
Figure 1   End User Modem Components

NOTE: The antenna-mount suction cups, drywall
plugs and screws are not shown in
Figure 1.

WARNING!

**Before installing or operating an End
User Modem, you must familiarize
yourself with the contents of this guide.
Your WISP (Wireless Internet Service
Provider) assumes no liability for
problems resulting from a failure to
adhere to these procedures, or other
recognized general safety precautions.**

NOTE: If your End User Modem system includes
an outdoor antenna, contact your WISP
for installation instructions.

2   Choosing a Location

The location of the EUM and the antenna directly affects the performance of your End User Modem system. Before you connect all the components, follow the guidelines in this section to choose the best position for the EUM and the antenna.

To Choose the Best Location for the EUM

1. Ensure that the EUM is:
   - upright;
   - on a stable, flat surface;
   - in a position where its air vents are unobstructed.

   NOTE: Avoid placing the EUM in direct sunlight or near other sources of heat (such as an electric heater).

To Choose the Best Location for the Antenna

1. Ensure that the Antenna is:
   - indoors;
   - near an outside entrance or window;
   - as high off the floor as possible;
   - a minimum of 20 cm (8 in.) from personnel.

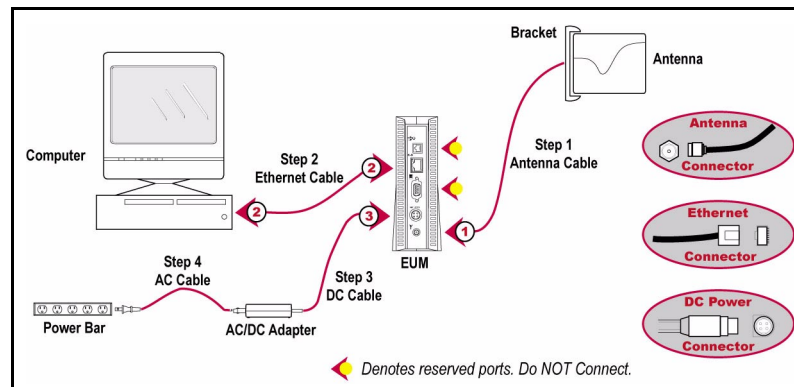— This page is intentionally left blank —

3   Connecting Kit Components

Now that you have chosen a suitable location, use the instructions in this section to connect the following components to the EUM:

- The Antenna
- Your Home Computer
- The AC/DC adapter

When you have completed the above tasks, connect the DC converter to the AC power supply.

Figure 2   Connecting the Components

To Connect the End User Modem Components

1. Finger-tighten the antenna cable onto the corresponding connector at the back of the EUM (refer to Step 1 in Figure 2). Do not use wrenches or pliers. Do not cross-thread or over tighten.

WARNING!

You must connect the antenna to the modem before operating the system. Failure to do so may result in permanent equipment damage.

2. Attach the crossover Ethernet cable that is included with your kit to the Ethernet port on your computer and the Ethernet port on the EUM (refer to Step 2 in Figure 2).

3. Connect the AC/DC adapter to the EUM. To do this, press firmly at the base of the DC connector on the power cord, and attach to the corresponding DC connector on the EUM (Figure 3).

Press firmly at the base of the DC connector

EUM
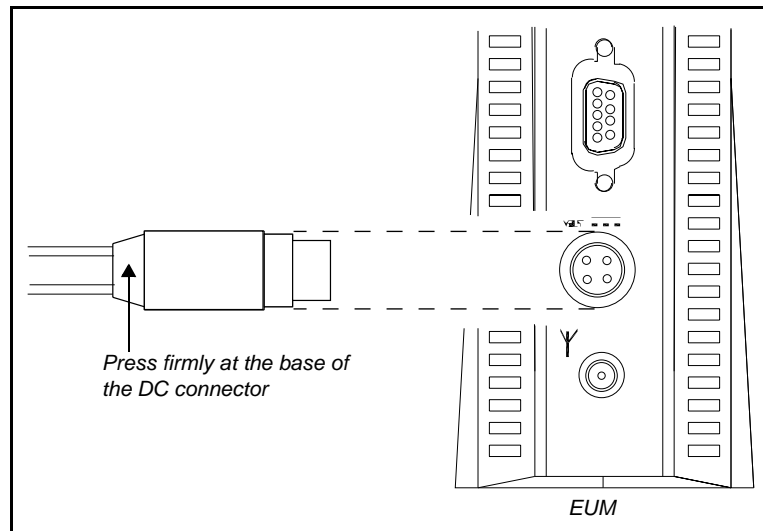
Figure 3   Connect the DC Power Cord to the EUM

NOTE: The DC power cable features a secure locking connector. To disconnect the cable, pull the collar back on the connector, then continue pulling to detach the DC power cable from the EUM.

Your End User Modem uses a custom antenna cable and connector. If you need to extend this cable, contact your Wireless Internet Service Provider (WISP).

4. Connect the AC-power cord between the AC/DC adapter and an AC outlet (Figure 4). Your EUM will power-up; there is no ON/OFF switch on the modem.

NOTE: To avoid potential damage to the End
User Modem components in the event of
a power surge, use a power bar with
surge protection (instead of connecting
the AC-power cord directly to an AC
outlet).

Power Bar   *AC Power Cable*   *AC/DC Adapter*
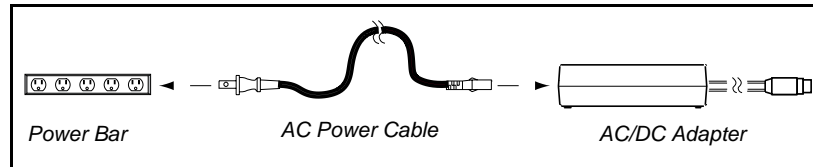
Figure 4   Connect the AC Power Cord
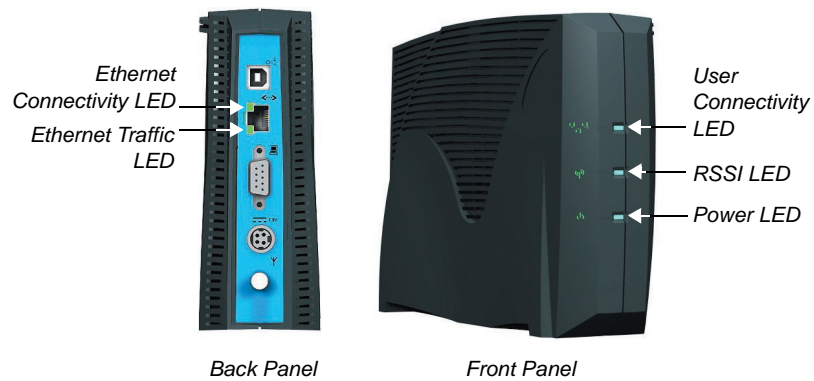
4   Testing Your EUM

Check the the LED (Light Emitting Diode) indicators on the front of the modem to ensure that your End User Modem is functioning properly and receiving an adequate signal.

Ethernet Connectivity LED

Ethernet Traffic LED

User Connectivity LED

RSSI LED

Power LED

Back Panel   Front Panel

Figure 5   End User Modem LEDs

To Verify Proper EUM Function

1. Check the Ethernet LEDs on the back panel to ensure that the Ethernet connection is active and data transmission is occurring. Refer to Table 1 for an explanation of the Ethernet LED status displays.

Table 1   Ethernet LED Status Displays

Ethernet Connectivity LED	This LED is lit when there is an active connection to your computer.
Ethernet Traffic LED	Flashes when data passes through the Ethernet connection in either direction.

2. Check the Received Signal Strength Indicator (RSSI) LED to ensure that the antenna is receiving an optimum signal in its current location. Refer to Table 2 for an explanation of the different RSSI LED status displays.

Table 2   RSSI LED Status Displays

Off	No signal is detected. The antenna is disconnected or is not aligned with your wireless internet service provider's antenna.
Slow Flash	The signal strength is poor.
Fast Flash	The signal strength is good.
Solid On	The signal strength is very good.

3. When attempting to send data to, or receive data from, your Wireless Internet Service Provider (WISP), check the User Connectivity LED to ensure that data transmission is occurring.

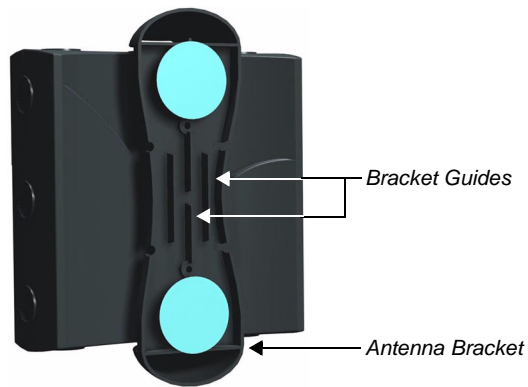This LED flashes as data traffic passes between your modem and the WISP.

— This page is intentionally left blank —

5   Mounting the Antenna

1. Thread the pre-attached antenna cable through the guides in the back of the antenna bracket, if required.

Bracket Guides

Antenna Bracket

Figure 6   Rear View of Antenna Bracket

NOTE: Bending the antenna cable too sharply can degrade EUM performance. Never allow less than a 1.25 cm (0.5 in.) bend radius. If a quarter (25-cent piece) fits into the curve, the bend is acceptable.

Your End User Modem kit includes suction cups, drywall plugs, and screws to allow a variety of mounting options:

Table 3   Antenna Mount Guidelines

Suction Cups	Use on flat, smooth surfaces, such as glass, plastic, laminates or metal. Remove all grease, oil, and grit before securing antenna bracket with suction cups.
Drywall Plugs	Use on all commercial drywall and other plaster surfaces.
Screws	Use on hardwood surfaces.

2. Insert the suction cups or screws into the base of the antenna bracket, then mount the bracket onto the desired surface.

   NOTE: If you mount your antenna bracket on a vertical surface, orient the bracket so that the spring clip is closest to the ceiling.

   Figure 7 shows the location of the spring clip, suction cup holes, and screw holes on the antenna bracket.
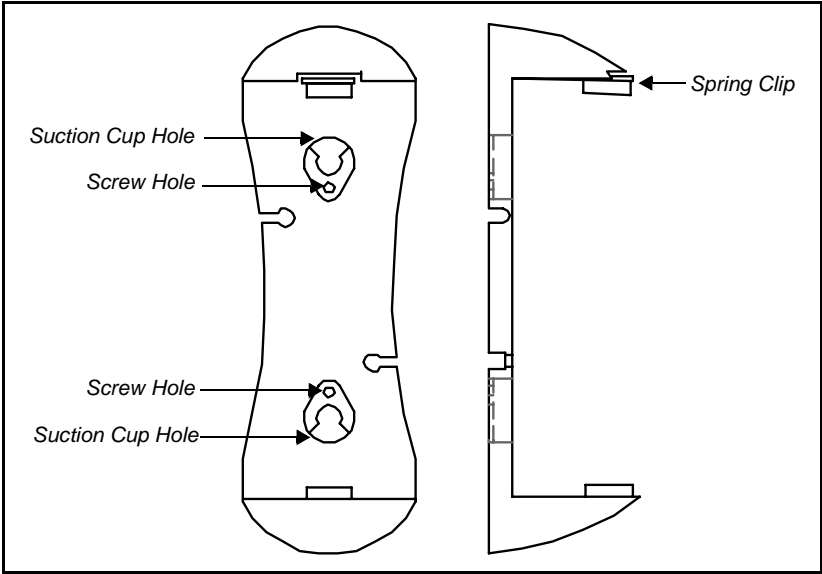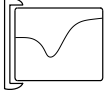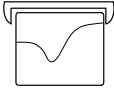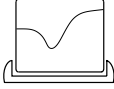
Figure 7   Antenna Bracket Components

Table 4   Surface Mounting Options for the Antenna

Side Mount	Mount the antenna on a wall, window, window frame, or solid furniture with spring clip side closest to the ceiling.
Top Mount	Hang the antenna from a ceiling or the shelf of a bookcase.
Bottom Mount	Mount the antenna on solid furniture (a desk or shelf) or on a window sill.

## WARNING!

The antennas for the EUM must be fix-mounted, indoors or outdoors, to provide a separation distance of 20 cm or more from all persons to satisfy RF exposure requirements. The distance is measured from the front of the antenna to the human body. Again, it is recommended that the antenna be installed in a location with minimal pathway disruption by nearby personnel.

3. Position the antenna in the bracket according to one of the configurations illustrated in Figure 8. Click and lock the antenna in place. For maximum signal reception, ensure that the concave surface of the antenna points toward the WISP antenna and the trough of the inset wave points towards the floor.

- Concave surface pointing towards WISP antenna

- Trough of inset wave pointing towards floor.

Inset wave
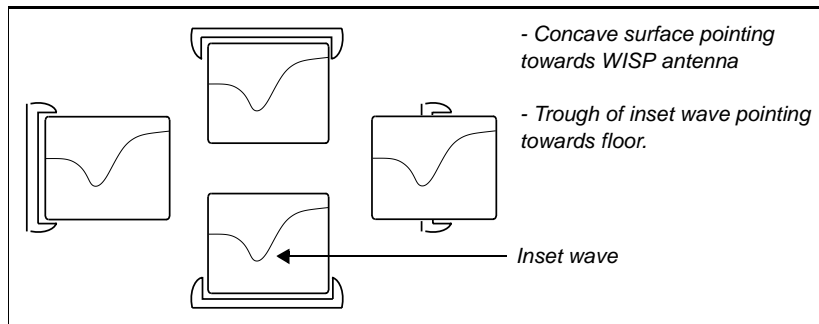
Figure 8   Mounting the Antenna in the Bracket

NOTE: The location, position, and orientation of the antenna affects the strength and stability of your Internet connection. Pointing the antenna at buildings or other obstacles often impedes communications, but some surfaces may provide desirable 'signal bounce'. For optimal reception, try various positions before fix-mounting your antenna.

— This page is intentionally left blank —

6   Troubleshooting

Q: I cannot receive a signal, regardless of where I place my antenna. What should I do?

A: Move the antenna outside, and check the received signal strength indicator (RSSI) LED on the modem.

- If you are receiving a strong signal, then your modem and antenna are both functioning properly. To improve your reception indoors, choose a better antenna location (see *Choosing a Location*, on page 3, and *Mounting the Antenna*, on page 13).
- If no signal is detected, your EUM is either not functioning properly, or you may require a special outdoor antenna to receive an adequate signal from your location. For more information, contact your WISP (Wireless Internet Service Provider).

Q: I have found a great location for the antenna, but unfortunately this location is a fair distance from my computer. As a result, I am unable to connect the antenna, EUM, and my PC using the cables included in the kit. How can I solve this problem?

A: To connect the antenna cable, place the EUM closer to the antenna. Then use a longer Ethernet cable to connect the EUM to your PC.

NOTE: The use of a longer Ethernet cable has no effect on network performance if you use a good quality cable, and the cable length is less than 100 metres.

Q: My EUM keeps shutting off automatically. How can I prevent this?

A: Your unit may be overheating due to inadequate ventilation. Lightly touch the casing of the modem. If the casing is hot, find a new location where the EUM can stand upright and away from other objects that may block airflow through its vents. If these measures have no effect, discontinue using the EUM, and contact your WISP.

7   **Regulatory Notices**

Industry Canada

The EUM has been designed and manufactured to comply with IC RSS-210.

The IC certification number for the EUM is 3225104140A.

Federal Communications Commission

The EUM has been designed and manufactured to comply with FCC Part 15.

The FCC ID for the EUM is OOX-LMS3000.

Interference Environment

Operation of the EUM is subject to the following conditions:
- This device may not cause harmful interference.
- This device must accept any interference received, including interference which might cause undesirable operation.

— This page is intentionally left blank —

— This page is intentionally left blank —

WaveRider Communications Inc.

255 Consumers Road, Suite 500

Toronto, ON M2J 1R4

www.waverider.com