Model 2472AA

Long Range, Moderate Power

Wireless CPE/Outdoor Bridge

Instruction Manual

Telex Communications, Inc.
8601 East Cornhusker Hwy, Lincoln, NE 68505

Rev. A, April 2004

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Applicable Law. The validity, performance and construction of this Limited Warranty shall be governed by the laws of the State of Minnesota without reference to its choice of law principles. The Minnesota federal courts and/or the state courts located in Hennepin County, Minnesota, shall have exclusive personal and subject matter jurisdiction over, and the parties shall each submit to the jurisdiction of such courts and to venue in Minnesota with respect to any dispute concerning the product or pursuant to this Limited Warranty, and all objections to such jurisdiction or to such venue are hereby waived.

For additional warranty repair or service information, contact the appropriate Telex service department listed below:

USA, Canada & Latin America
(DUPLICATION)
Telex Communications, Inc.
West First Street
Blue Earth, MN 56013 USA
Tel: 507/526-3205
Fax: 507/526-3059

(WIRELESS, VEGA, WALS, LANDMOBILE)
8601 E Cornhusker Way
Lincoln, NE 68507
Tel: 402-467-5321
Fax: 402-467-3279

(EDUCATION AND AVIATION HEADSETS)
1720 E 14th Street
Glencoe, MN 55336
Tel: 320-864-3177
Fax: 320-864-3225

Germany, Rest of Europe and Africa & Middle East
(Duplication)
Telex EVI Audio GmbH.
Hirschberger Ring 45
D 94315, Straubing, Germany
Phone: +49 9421-706 0
Fax: +49 9421-706 265

Mexico
(CB MICS)
Saguaro Elect
Hermosillo, Mexico 83280
Tel: 011 5262 607012
Fax: 011 5262 607010

FCC STATEMENT

This Wireless CPE has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment!

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm (8 inches) between the radiator and your body.

Installation Requirements

The antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The operator of this transmitter, or if the equipment is professionally installed, the installer, is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations.

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Chapter 1: Introduction

The Telex Wireless CPE/Outdoor Bridge

Perfect for the home or small office connection to the network, the Telex Wireless CPE (Customer Premise Equipment) extends wireless connectivity from an access point to any Ethernet-ready network device, such as a switch, router, desktop or notebook PC. The Wireless CPE simply and efficiently transmits data between 10Base-T and your wireless LAN or wireless ISP access point.

The Telex Wireless CPE gives you the freedom to place any standard networked computer anywhere within range of an access point. A built-in 18 dBi antenna and 50 mW radio means that you can easily cover distances of up to 8 miles at 1 Mbps and up to 3 miles at 11 Mbps.

Based on signal strength, it dynamically shifts between 11, 5.5, 2 and 1 Mbps network speeds for maximum reliability of connection. So you've got the flexibility and performance you need from your wireless LAN or wireless ISP.

Wireless data or VoIP is transmitted and received from the CPE to the network access point (AP) on the 2.4 GHz ISM band. The radio signal path must be line-of-sight (LOS) between the 2 antennas.

Features

- An All-in-One Wireless Solution for any Ethernet-Ready Network Device
- Easy IE and Netscape Web browser configuration, no additional drivers needed
- Interoperable with 802.11b (DSSS) 2.4 GHz Equipment, Prism 2.5 based
- Up to 11 Mbps High-Speed Data Rate, Throughput up to 5.5 Mbps
- Moderate-Power (+35 dBm EIRP) and Moderate Sensitivity (-89 dBm @ 1 Mbps)
- 12VDC Power-over-Ethernet (PoE) supplied, up to 24VDC available
- Transient Suppression for high reliability
- Broad operating temperature, -20 to +125 F
- All nearby 802.11b access point information displayed in Wireless Scan
- Clickable association with access point within Wireless Scan
- Manual entry of ad-hoc or infrastructure mode, SSID, channel, transmission rate and access point density available
- Selectable static IP address or DHCP client mode
- Selectable MAC address cloning
- Selectable inbound and outbound bandwidth limiting from 64 Kbps to 1500 Kbps
- Signal and noise displayed in dBm, quality displayed in %
- Tx Rate, Link quality, signal strength and noise displayed in large font in new window for antenna aiming
- Adjustable RTS and fragmentation settings
- Up to 128 bit WEP with keys auto-generated from pass phrase
- Ability to deny unencrypted data when WEP is enabled
- Shared key authentication available when WEP is enabled
- Layer 2.5 bridging
- Changeable settings for port interface access to web server
- Support for firmware upgrades
- Syslog client option for events logging
- Integrated 18 dBi antenna with 18 degree beam widths in both planes
- Standard multimount for DSS, mast & under eaves (fascia) mounting
- Selectable vertical or horizontal antenna polarization
- Waterproof cable entry
- Waterproof and dustproof radome enclosure
- Removable, serviceable radio area within CPE
- LED status lights visible through window on back panel

Package Contents

PoE Injector

12V Power Supply

7' Cat5 Cable

Telex CPE

Angle Bracket

Hardware pack

CD & Quick Guide

Tools and Hardware Needed:

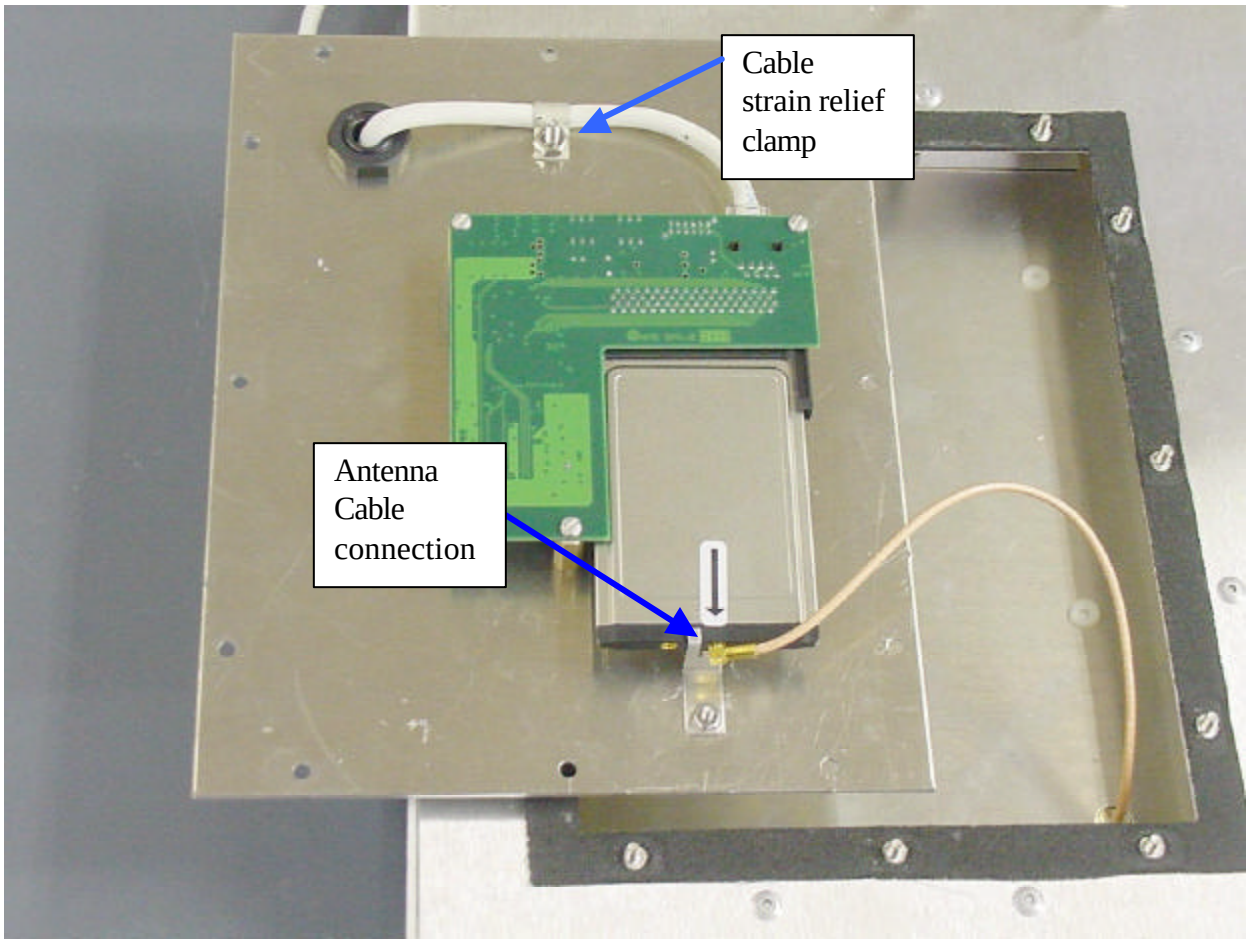
The following tools will be needed to assemble and mount your wireless CPE:
7/16" nut driver or wrench
5/16" nut driver or wrench
3/4" wrench or adjustable wrench for grommet nut
UV-stable plastic cable ties or black electricians tape
Mast pipe or DSS dish mount on which to mount the CPE
Adequate length of exterior CAT-5 cable
RJ45 plugs and crimping tool

Chapter 2: Getting to Know the Wireless CPE

Inside the Wireless CPE

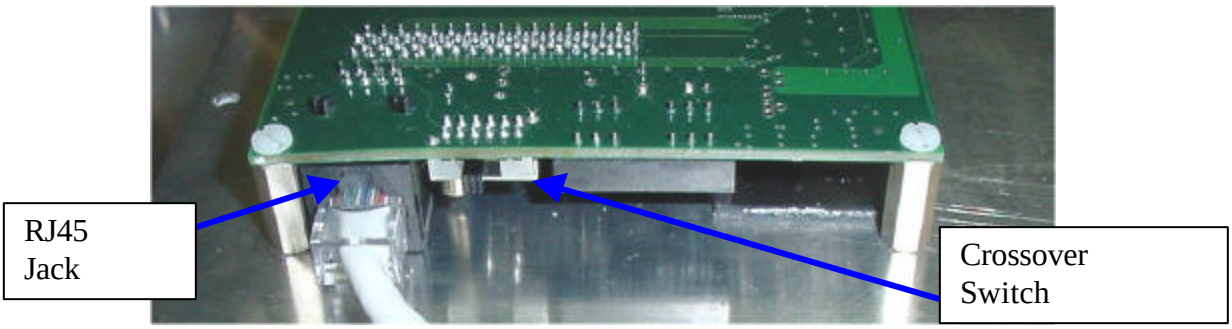
Before you can either test or install the Telex Wireless CPE, you must attach a length of outdoor-rated (external) CAT-5 Ethernet cable to the unit. Remove the access panel from the rear panel of the CPE using a 5/16" nut driver or wrench. Loosen the plastic nut on the outside of the waterproof cable entry grommet, then insert the unterminated end of a length of exterior CAT-5 8-conductor Ethernet cable through this grommet.

Attach a standard RJ45 connector to the end of this cable using standard wiring for a straight (non-crossover) connection. Plug this connector into the RJ45 socket on the PCB (printed circuit board) that is attached to the access panel. Tighten down the cable strain relief clamp on the cable. Do NOT unplug the small antenna cable from the radio card unless absolutely necessary.

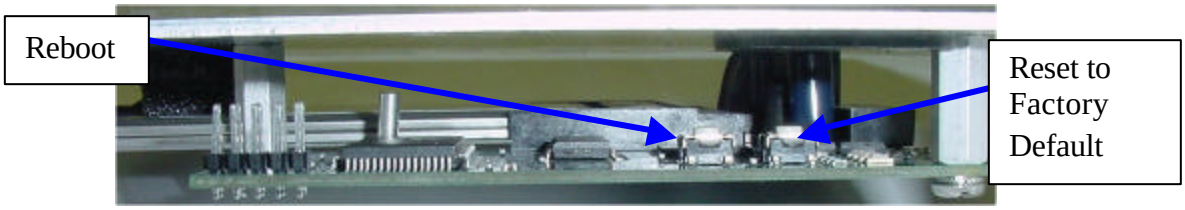


WARNING: Before touching the PCB, make sure that you are grounded and have dissipated any static charge to ground.

You will see a small 2-position slide switch near the RJ45 socket. If you are connecting the wireless CPE directly to a computer network card or other Ethernet device, then slide this switch toward the RJ45 socket. If you are connecting the wireless CPE to a hub or switch, then slide this switch away from the RJ45 socket. Later, when you apply power to the unit, the second green LED will indicate if this switch position was properly selected.



There are two small pushbutton switches on the PCB. These are only used if you wish to reset the wireless CPE to factory default settings. (e.g. you forgot or lost the user name and/or password)



Allow approximately 6 inches of CAT-5 cable between the grommet and the PCB, then tighten the outside nut of the weatherproof grommet. Also ensure that the inside nut is secure. Make sure that both the small antenna cable and the CAT-5 cable are secure, then re-attach the access panel to the CPE rear panel before proceeding.

The Power-over-Ethernet (PoE) injector

The Telex Wireless CPE uses a PoE injector to supply DC power to the device. To test the wireless CPE, install another RJ45 plug to the other end of your exterior CAT-5 cable and connect this end to the PoE box in the socket marked ANTENNA. Also connect one end of the supplied 7 foot CAT5 patch cable in the socket marked COMPUTER. The other end of this 7 foot cable will plug into the Ethernet port of your computer or into a hub or switch port. Plug the supplied 12 volt 1 amp supply into a standard 110VAC outlet or power strip. Plug the other end of this DC supply into the PoE box in the socket marked DC.

WARNING: Make sure that the antenna is pointed away from any humans or animals while power is applied! A safe distance is approximately **10** inches or more.

The PoE injector box may be placed on the floor or mounted anywhere near the computer, hub, switch or router.

The Rear Panel LED's (v 1.2.5 firmware)

There are 4 LED's visible from the rear side of the wireless CPE. These can be seen through the small window in the access panel. When powered-up, the first green LED will be lit ONLY if the PoE box is connected to an active Ethernet port. If it does not light, then check that all cables are plugged into the PoE box and the power strip is turned on (if used). If power is supplied and the cable is plugged into an active Ethernet card, hub, switch or router and the first green LED is not lit, then move the switch on the PCB inside the CPE to the other position. If this LED is still not lit, then check the wiring of the RJ45 plugs on the exterior CAT-5 cable. Also check to make sure that the computer, hub, switch or router is turned on. This green LED will fast blink when passing Ethernet traffic. The second green LED will light when a connection or association has been established to a wireless access point and will blink when passing wireless traffic.

The first red LED (3rd LED in line) indicates an Ethernet collision. The second red LED (4th LED in line) indicates a WLAN error. This LED will light if an access point goes down or is unavailable after a connection has been made with the CPE. This LED will NOT light if the SSID is left blank (to use any SSID) and no access points are available. In general, the GREEN LED's indicate normal operating conditions and the RED LED's indicate errors.

The window that covers these LED's should be securely attached to the access panel at all times. This helps to keep dust and moisture out of the CPE.

WARNING: Unplug the power supply from the PoE box before installing or handling the wireless CPE.

Chapter 3: Installing the Wireless CPE

Selecting a Mounting Location

It is very important to position the CPE to ensure the highest possible data transfer speed in all kinds of weather and in all seasons. The wireless CPE operates on a radio frequency of 2.4 GHz and must be line-of-sight (LOS) with the access point (AP) or other CPE if in Ad-Hoc mode. Hills, buildings, trees and large vehicles must not block the signal path. Trees are especially troublesome as they may allow the signal to pass easily in winter when leaves are off, but may block the signal in the other seasons. Check the FAQ's under "Pre-Installation and Site Preparation" or "Radio Propagation" or "Troubleshooting" on the Telex Wireless web pages for helpful hints. (http://www.telex.com/Wireless/faq.nsf/c)

Determine the exact location of the nearest Access Points (AP's) in your system. Choose a location on the roof, mast, wall or fascia for your wireless CPE so that the CPE has a clear shot to your AP. The closest AP may not necessarily have the best path if it is blocked by hills, buildings or trees.

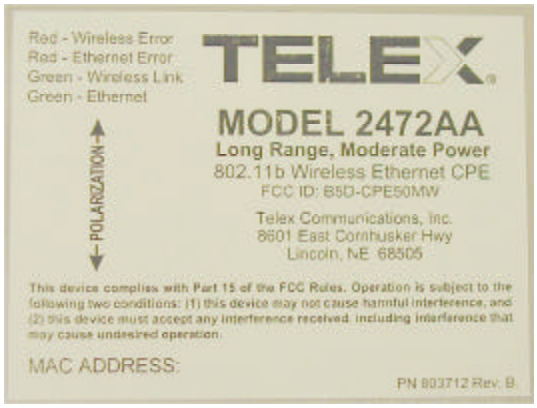
Ensure that the chosen signal path has sufficient Fresnel zone clearance with respect to the ground or other obstacles near the path. Check the Telex FAQ's under "Radio Propagation" for more information on Fresnel zone clearance.

Ensure that your mounting location is less than 100 meters from the computer, hub, switch or router location. (Maximum length of CAT-5 cable is 100 meters) Determine the building entry point ahead of time to prevent problems later.

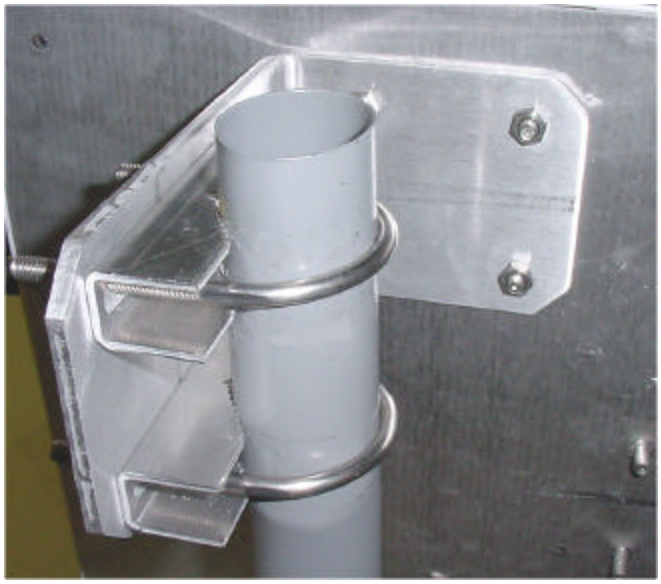
Limit the exposure of the CPE to wind if possible. Mounting the CPE on the fascia (under the eaves) is best if the signal path is not blocked in this location.

Attaching the Mounting Bracket and Aiming

First, determine the polarization of the wireless CPE. If the Access Point uses vertical polarization (V-pol), then the CPE must be installed vertically polarized. If the AP is H-pol, then the CPE must be installed horizontally polarized. The arrow on the CPE label points vertically when it is V-pol, and horizontally when H-pol. The arrow direction also corresponds with the long dimension of the CPE radome.



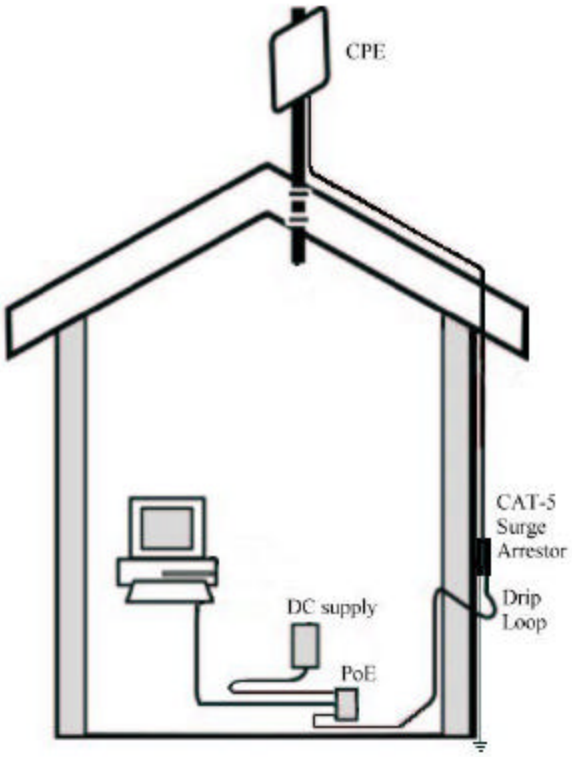
If attaching the wireless CPE to a mast, pipe or DSS dish-mount, then attach the angle bracket to the mast as shown, using the U-bolts, nuts, washers and serrated clamps from the parts bag. If possible, sight along the top of the angle bracket to aim the wireless CPE in the correct direction. If you are using a vertical mast and require upward or downward beam tilt to the AP, then use the optional holes in the angle bracket to obtain a 10 degree tilt, either up or down. If you require more than 10 degrees, then use a standard DSS dish-mount instead. After aiming the bracket, attach the CPE unit to the angle bracket using the remaining washers and nuts. Tighten securely after checking the signal strength.



If attaching the wireless CPE to the fascia (under eaves), then secure the angle bracket to the fascia with a single wood screw, attach the CPE to the bracket, aim for maximum signal and finally secure the bracket with the 3 remaining wood screws. Make sure that the fascia is strong enough to support the weight and wind load of the CPE!

Routing the CAT-5 cable

When you have completed aiming and securing the CPE to the mount, attach and secure the CAT-5 cable to the mounting pipe or other support using tie wraps or black electrical tape. Secure the CAT-5 cable to the outside wall of the building using cable clamps and wood screws or other suitable hardware. It is advisable to place a CAT-5 Surge Arrestor in series with the cable before it enters the building. Also, create a "drip loop" before the cable enters through the wall of the building. This prevents water from following the cable into the building.



Pull any excess cable into the building, then weather-seal the hole around the CAT-5 cable with quality exterior grade sealant. Route the cable to the PoE location inside the building.

Connecting the Wireless CPE

Install an RJ45 plug to the end of your exterior CAT-5 cable and connect this end to the PoE box in the socket marked ANTENNA. Also connect one end of the supplied 7 foot CAT-5 patch cable in the socket marked COMPUTER. The other end of this 7 foot cable will plug into the Ethernet port of your computer or into a hub or switch port. Plug the supplied 12 volt 1 amp supply into a standard 110VAC outlet or power strip. Plug the other end of this DC supply into the PoE box in the socket marked DC.

WARNING: Make sure that the front of the antenna is pointed away from any humans or animals while power is applied! A safe distance is approximately 10 inches or more. The rear side of the CPE is always safe.

The PoE injector box may be placed on the floor or mounted anywhere near the computer, hub, switch or router.

There are 4 LED's visible from the rear side of the wireless CPE. These can be seen through the small window in the access panel. When powered-up, the first green LED will be lit ONLY if the PoE box is connected to an active Ethernet port. If it does not light, then check that all cables are plugged into the PoE box and the power strip is turned on (if used). If power is supplied and the cable is plugged into an active Ethernet card, hub, switch or router and the first green LED is not lit, then move the switch on the PCB inside the CPE to the other position. If this LED is still not lit, then check the wiring of the RJ45 plugs on the exterior CAT-5 cable. Also check to make sure that the computer, hub, switch or router is turned on. This green LED will fast blink when passing Ethernet traffic. The second green LED will light when a connection or association has been established to a wireless access point and will blink when passing wireless traffic.

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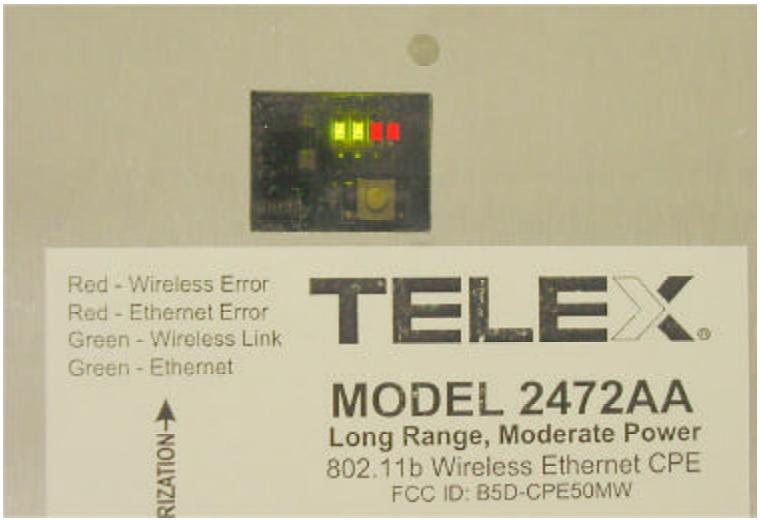


Chapter 4: Configuring the Wireless CPE

Overview

The Telex wireless CPE is shipped with default (factory-set) values for certain network settings. You will need to change these settings at the client location to match those provided by your ISP or IS Department.

To do this requires 3 main steps:

1. Change your computer network settings to match the default network settings in the CPE so your computer can communicate with the CPE.

2. Using a standard web browser (Internet Explorer 5.5 or later, Netscape 7.0 or later), change the CPE wireless network settings from the default values to the values provided by your ISP or IS Dept. so that your CPE can communicate with the Access Point or another CPE.

3. If necessary, change the network settings on the CPE and computer to match other devices on a wired network connected to the computer.

If you do not know how to enable and change network setting on your PC, contact your network service provider (ISP or IS Dept.) support desk or a qualified PC technician for assistance.

If your network service provider has not already provided you with specific network settings to use, contact them now and ask for the following:

1. The IP Address assigned to your CPE:
2. The corresponding Subnet Mask:
3. The corresponding Default Gateway:
4. The corresponding SSID and radio channel:

If your network uses DHCP to assign IP addresses automatically, you may not need the IP address, Subnet Mask or Default Gateway.

Step 1: Change your computer network settings

a. Enable TCP/IP networking on your PC if you have not already done so, then right-click (use the right mouse button) on the Network (**My Network Places**) icon on your computer's desktop and select **Properties** from the pop-up menu.

b. Right-click on **Local Area Connections** and select **Properties** from the pop-up menu.

c. Click on the installed **TCP/IP** protocol, then click **Properties**.

d. Enter the following settings: IP Address: 192.168.1.100
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.1.1

e. Click OK to accept the settings.

f. The NIC must be set to 10 Mbps and "Proxy Server" must be unchecked under LAN settings. Restart your computer if prompted.

Step 2: Change the CPE wireless settings

Open your web browser. (Internet Explorer 5.5 and 6.0 or Netscape 7.0 have been tested to work properly. Other browsers may work but have not been verified.)

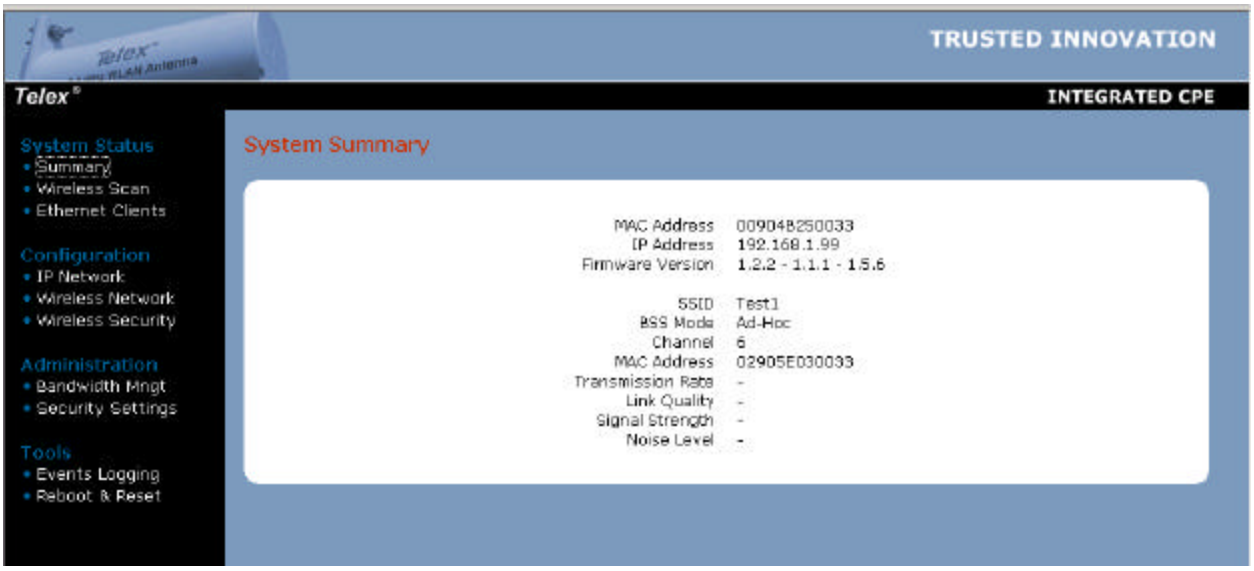
Open the following URL: 192.168.1.99 (select "try again" if the computer detects that you are offline.)

The following window should appear:

The first time that you use this, just press **OK**. The User Name and Password will be set later.

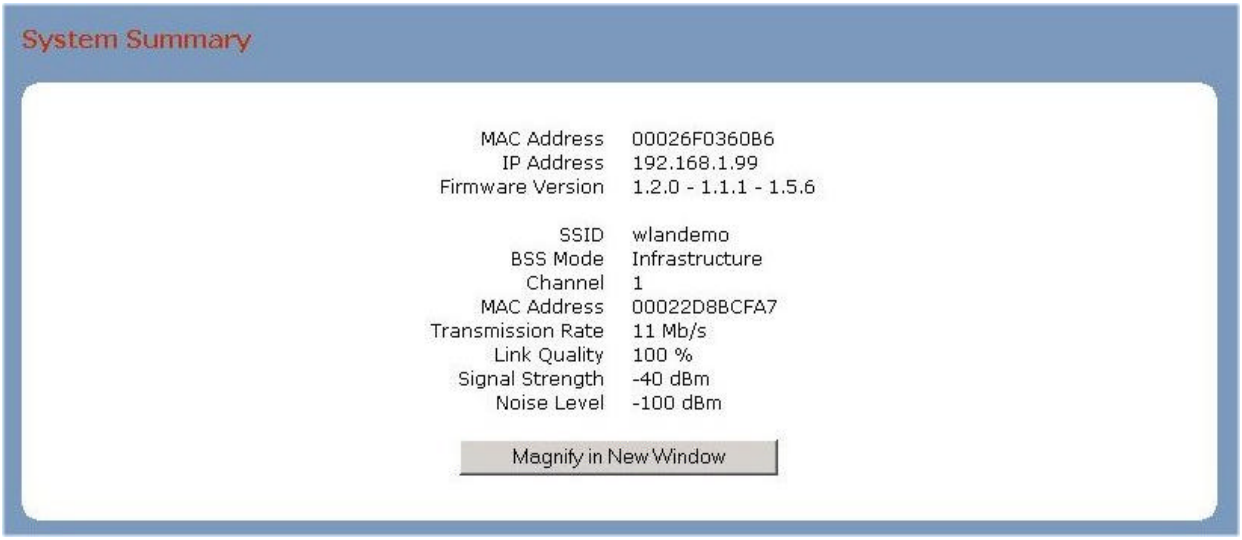
System Status

The following page should be displayed if no access points are available. Make sure that the **Firmware Version** is current (see Chapter 7). Check the Telex website occasionally to check for updates.

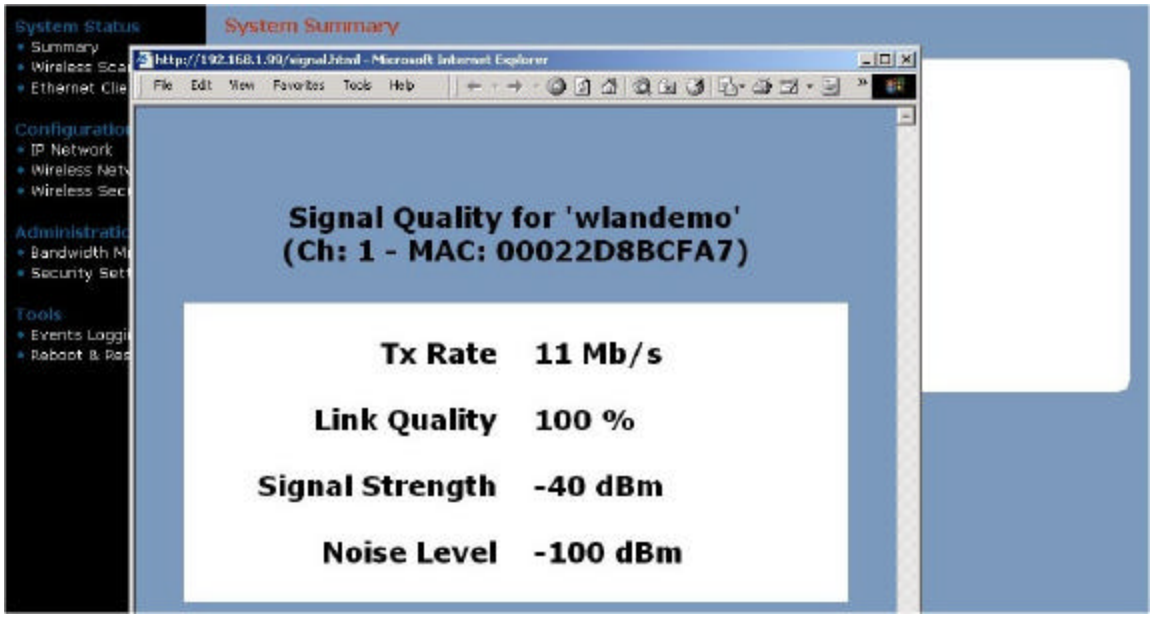


Select the **Wireless Scan** page to show available access points and their channel, signal level and BSS Mode (including WEP). Press the **Refresh** button to update.

If your network **SSID** is shown in the **Scan** (e.g. wlandemo), then click on it to automatically associate the CPE to this AP. After clicking on the SSID and clicking OK, the Status Page should look like this:



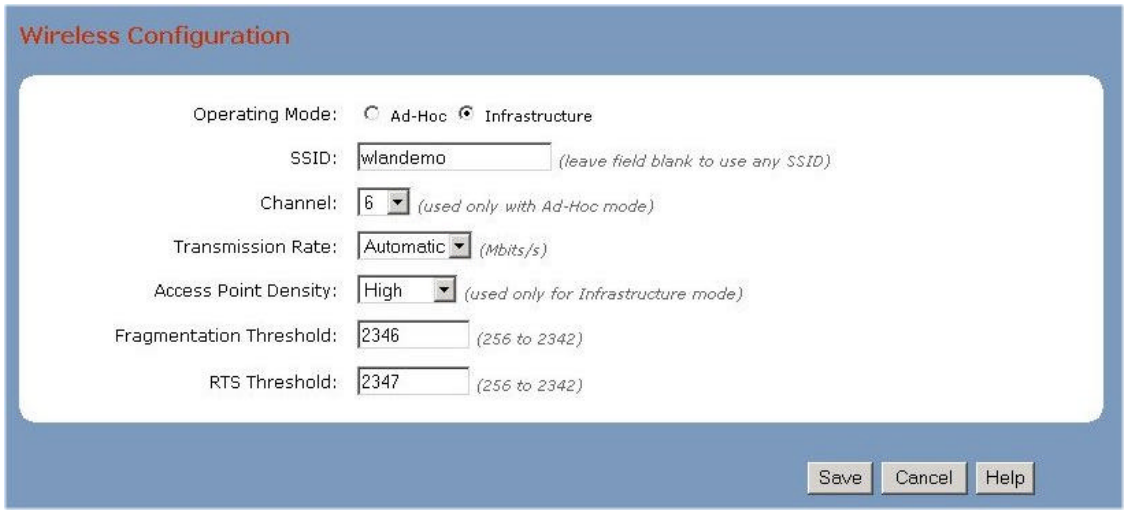
Click on **Magnify in New Window** to open a large font window for use in antenna aiming. This window automatically updates every few seconds. It should look like this:



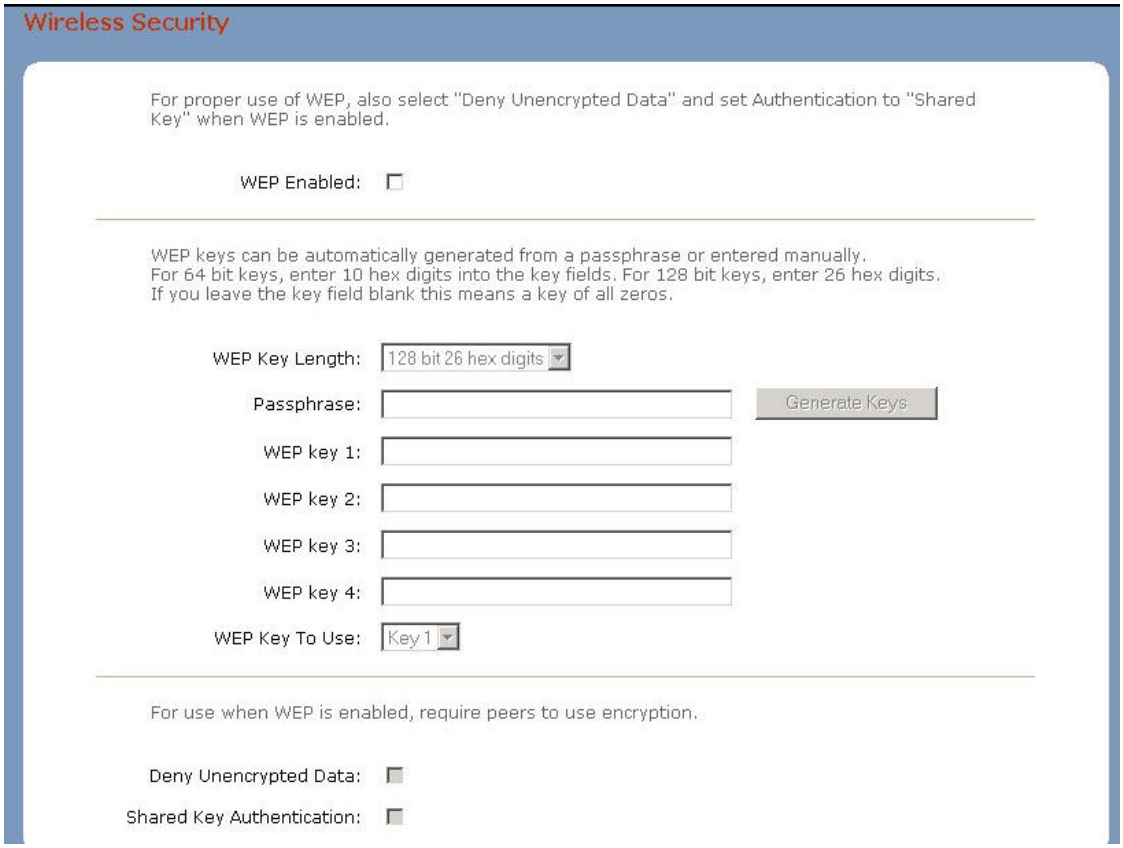
The **Ethernet Clients** page will show all computers currently wired to this CPE.

Configuration

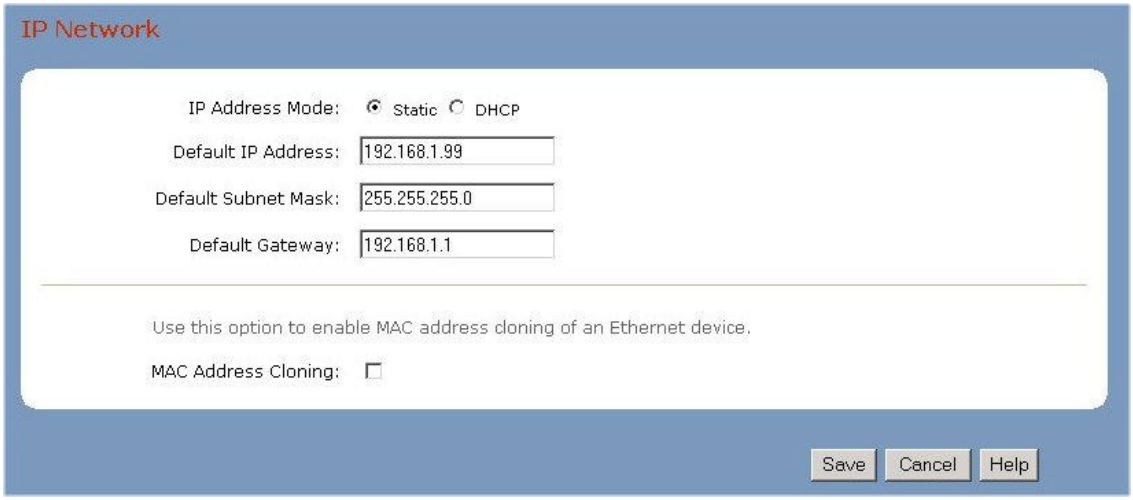
To enter the **SSID**, **Channel**, **Transmission Rate, Access Point Density** or **RTS** information manually, select the **Wireless** screen as shown below. For information on any selection, press the **Help** page tab. Make any changes you require, then click **Save**.



To use standard WEP security, select the **Security** page tab shown below and select **WEP enabled**. Choose from either 64 or 128 bit WEP Key Length, then enter the pass phrase. Make sure that your access point uses the same WEP information.



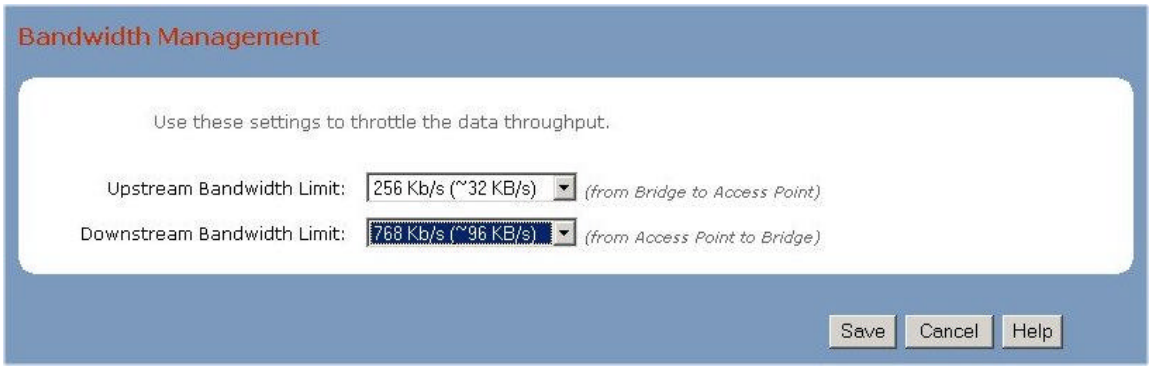
To set the IP Address of the CPE, use the **IP Network** configuration page as shown below. If you change the CPE's static IP address to a different subnet, make sure that you also change your computer's IP address after exiting the browser. Otherwise, the computer and CPE will not be able to communicate with each other. They must be on the same subnet in order to see each other. If you plan on having more than one CPE with a static IP on the same subnet, you MUST change the last number of the IP address. You can also **enable MAC address cloning** on this page.



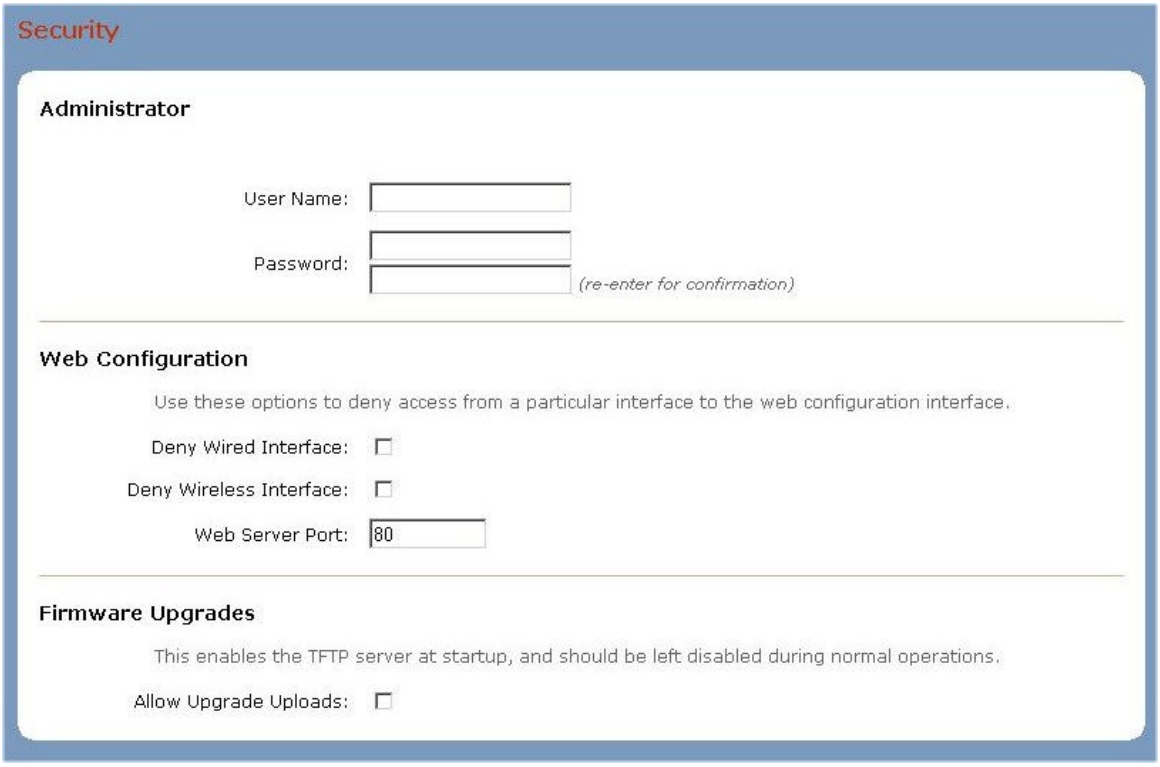
IP Address: _____

Administration

In the **Bandwidth Management** page shown below, you may set the **Upstream** and **Downstream** bandwidth limits for this CPE.



In the **Security Settings** page shown below, you may set the **User Name** and **Password** for this web interface. Make sure that you write down this information and store in a safe place so that it is not forgotten or stolen. Any time that you wish to reset the CPE to factory defaults, click on the **Reset Configuration** button on the **Reboot & Reset** page. The **Security Settings** page also allows you to either **Allow Upgrade Uploads** or Not Allow. For normal operation, leave this off. The **Web Server Port** may also be changed if required.



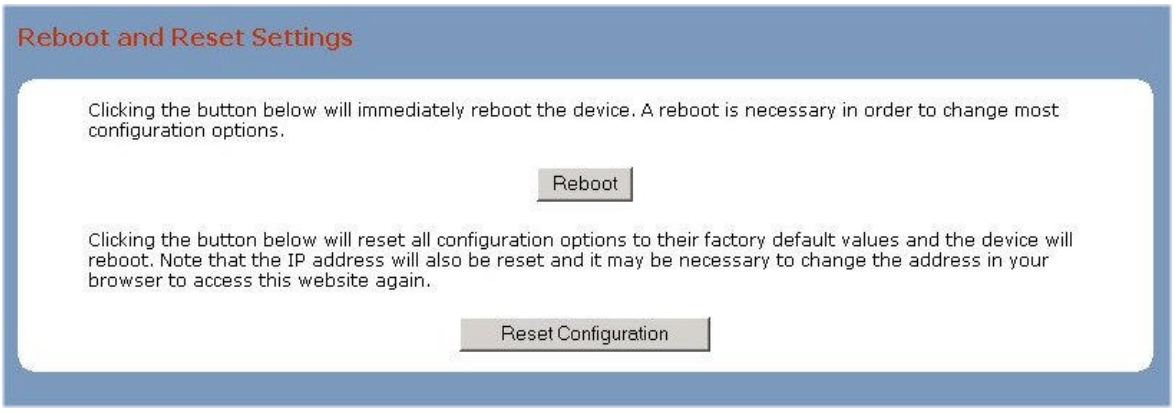
User Name: _____

Password: _____

Tools

In the **Events Logging** page shown below, you may use these options to configure a Syslog client, which can send events and information messages to a Syslog server.

In the **Reboot & Reset** page shown below, you may use the **Reboot** button to immediately reboot the CPE. The **Reset Configuration** button will reset all configuration options to their factory default values.



Help Pages

The **Help** pages are accessible from most Configuration, Administration and Tools pages by pressing the **Help** button.

Remote Access

When all changes have been made and saved at the client CPE location, close the browser. Subsequent changes may now be made from either the client location or anywhere on the network as long as you are in the same subnet.

IMPORTANT: If you disassociate the CPE from the AP, either by changing a setting or by resetting the CPE, you must reassociate the CPE from the client location.

Step 3: Reset Your Computer Network Settings

The last step in the CPE configuration is to reset your computer network settings so they match the settings used by your CPE and your ISP's or LAN's access point. This step may be skipped if no changes were made to the CPE IP address during Step 2.

a. Right-click on the Network icon (**My Network Places**) on your computer's desktop and select **Properties** from the pop-up menu.

b. Right-click on "**Local Area Connection**" and select **Properties** from the pop-up menu.

c. Select the installed **TCP/IP protocol**, then click the **Properties** button.

d. **If using static IP addresses:** Enter an IP Address for your computer that is different than the CPE's IP address. Usually, you can use an IP number that is one higher than the CPE IP address. For example, if the CPE's IP address is 192.168.1.99 then assign 192.168.1.100 to the computer. If you have many computers and CPE's in your network, then make sure that each uses a different IP address within the same subnet.

e. **If using static IP addresses:** Change your computer's Subnet Mask and Default Gateway settings to match the values you received from your ISP or IS Dept.

f. If you selected "**Obtain an IP address automatically**" in your computer, then the CPE should transparently pass internet traffic to your computer. You will not be able to change the CPE settings until you reset the computer to a static IP. Set the DNS Server information if necessary.

g. Click on **OK** in each window to accept the changes.

h. Restart your computer if prompted.

i. If using a static IP on the CPE, open your web browser to the CPE's IP address to ensure that the computer can still talk to it.

Chapter 5: Managing the Wireless CPE

The initial association of the CPE with an access point must be performed at the client location. However, once connected to the network, the CPE's settings may be monitored and changed from any computer on the same subnet.

From this remote computer, open the web browser and enter the CPE's IP address as the URL. You must know the **User Name** and **Password** for this CPE in order to log in and change the settings.

Once logged-in, you may change anything except those items that affect the association of the CPE with the rest of the network. If the association is lost, then you may only communicate with the CPE from the local client computer.

These items may be easily changed:

Wireless Configuration:
Transmission Rate (to a lower value)
Access Point Density
Fragmentation Threshold
RTS Threshold – if the packet size is larger than this value, it will initiate the RTS/CTS function

Bandwidth Management:
Upstream Limit
Downstream Limit

Events Logging:
Device Name
Syslog Server IP Address
Syslog Mark Interval

Changes to all other items must be evaluated with respect to their effect upon device association.

After you have changed the item setting, press **Save** then **Reboot**.

Chapter 6: Troubleshooting

Problem:
After plugging in all cables and applying DC power to PoE, no lights come on.

Possible Causes / Solutions:
Cat-5 cable not wired to RJ45 plugs correctly. - Replace Cat-5 cable & check wiring
Cables plugged into wrong jacks of PoE box - use correct jacks
Defective power supply - Replace power supply
Defective PCB in CPE - Replace CPE unit
Defective PoE - Replace PoE box
Straight/Cross-over switch in wrong position - move switch to other position
Computer Network IP not set correctly - change Network IP to 192.168.1.100
Computer, hub, switch or router not turned on - turn on equipment
Computer Cat-5 cable not plugged-in - plug cable in
Cat-5 cable not wired correctly - Replace Cat-5 cable & check wiring
Defective PCB in CPE - Replace CPE unit

Problem:
First Green light is on and system tray shows connection to the NIC, but cannot load CPE log-in page

Possible Causes / Solutions:
Proxy Server box checked on LAN settings – uncheck this box
Auto-negotiate function turned on in NIC – manually set to 10 Mbps

Problem:
First Green light is on but not second green light

Possible Causes / Solutions:
CPE is not associated with any Access Points - Set AP association, check status of AP

Problem:
"Click to Associate" does not work

Possible Causes / Solutions:
Older Version of Browser in use - Load Internet Explorer 5.5 or 6.0

Problem:
CPE initially associates with AP, but locks up after changing settings

Possible Causes / Solutions:
More than one computer with same IP address on subnet – change.

Check the CPE FAQ's on the Telex Wireless web pages for helpful hints and troubleshooting guides. (http://www.telex.com/Wireless/faq.nsf/c)

Chapter 7: Firmware Documentation

The current firmware is 1.2.5 - 1.1.1 – 1.5.6. This is Ethernet PCB firmware version 1.2.5 and PRISM firmware 1.1.1 (primary) and 1.5.6 (secondary). To upgrade firmware, ensure that the CPE and attached computer are on the same subnet, then run the supplied Locator tool.

1.2.5-1.1.1-1.5.6 Release Notes:

Default settings:
IP: 192.168.1.99
SSID: (empty)
No WEP, no user name, no password
Disallow firmware upgrades

1.2.5 (2 December 2003)

- Fixed a problem with TCP deadlocking when receiving data from a remote host but being unable to make progress retransmitting a lost segment.
- Cleaned up web server's error recovery on aborted requests.
- Added BSSID and RSSI to syslog mark messages.
- Improved RSSI and noise level dBm readings.
- Fixed wrong MAC address displayed by Locator.
- Now show the device the bridge is associated with on the Scan List page, but not clickable.
- Changed the bandwidth control: now account for protocol headers (Ethernet, IP, TCP and UDP) in the bandwidth calculation. Also, ICMP and IGMP packets are not bandwidth limited anymore.

1.2.2 (25 August 2003)

- Fixed typos in help pages.
- Fixed web server port problem.
- Fixed a bunch of small items.

1.2.1 (25 July 2003)

- Fixed self-programming LED's.
- Fixed typo in WEP help page.
- Fixed scan list signal level.

1.2.0 (22 July 2003)

- Added syslog client.
- Added ability to deny access to the web UI from Ethernet or WLAN.
- TFTP server disabled by default.
- Added support for Locator Utility Tool.
- Changed default settings for SSID to "none".

Chapter 8: 2472AA Specifications

General:

Model Number	2472AA
Standard	IEEE 802.11b, 802.3
Regulatory Certifications	FCC Part 15
Mode	Point-to-Point under Part 15.247
Channels	11 Channels (US, Canada)
Frequency Band	2.400 – 2.483 GHz
Radio Type	Direct Sequence Spread Spectrum (DSSS)
Modulation	CCK (11, 5.5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps)
Radio Raw Data Rate	11, 5.5, 2 and 1 Mbps, Auto Fall-Back
Maximum LOS Range	approx. 8 miles (13 km) at 20 dB SOM & 1 Mbps
Typical LOS Range	approx. 3 miles (5 km) at 20 dB SOM & 11 Mbps
Security	64/128 bit WEP

Electrical Specifications:

Operating Voltage	from 9 to 24 VDC, 12VDC supplied
Operating Current	200 mA standby, 250 mA max (TCP)
Radio conducted output power	17 dBm (50 mW)
Antenna gain	18 dBi
EIRP	35 dBm (3 watts)
Radio Sensitivity	-81 dBm @ 11 Mbps, -83 dBm @ 5.5 Mbps -87 dBm @ 2 Mbps, -89 dBm @ 1 Mbps

Environmental:

Temperature Range	-40 to 140 F (storage), -20 to 125 F (operating)
Humidity	5% to 95% typical

Physical:

CPE Dimensions	14” x 15.75” x 1.75” (35.5 x 40 x 4.4 cm)
CPE Weight	4 lbs. (1.8 kg)
Wind Surface Area	1.5 sq. ft. (0.14 sq. m)