

MobiRake 2000 Wireless Backhaul OFDM-TDMA Outdoor Radio

UHF Band – 400MHz / 800MHz

User Manual

Includes install, configuration and trouble shooting information for the broadband wireless access outdoor radio.

Version 1.0.4



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About This Manual

This manual includes install, configuration and trouble shooting for the 400MHz / 873MHz licensed band radio. It can help you in avoiding the unforeseen problems and use the outdoor radio correctly.

Technical Support

If you have difficulty resolving the problem while installing or using the wireless backhaul, Please contact the supplier for support.

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Conventions

This publication uses the following conventions to convey instructions and information:



This symbol means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.



This symbol means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Chapter 1 Introduction

With highly-powered OFDM-TDMA technology, this radio is a long distance high capacity wireless backhaul for 400MHz / 873MHz licensed UHF band.

It utilizes Time Division Duplex technology allowing operation on a single channel with different uplink / downlink ratio. This improves the efficiency of channel BW usage rate. The Ethernet products are primarily designed to provide standard Ethernet interface in a wireless link between distant sites.

This long distance backhaul has powerful security management because it supports WEP-128bits, AES-256 bits encryption, and use the proprietary protocol. All these functions make the network much more secure and reliable.

1-1 Features and Benefits

■ Effective spectrum utility / variable capacities

400MHz radio has 2 channel bandwidths (5/10MHz) for optional, which is adjustable via software. This function provides flexibilities of channel plan and variable capacities for different applications.

■ OFDM-TDMA technology improves the performance in long distance

This radio improves the throughput performance up to 50~70% in long distance due to the better efficiency of OFDM-TDMA technology, that means the system has the same performance with lower EIRP (smaller antenna) compare to other standard wifi products.

■ Time-Division Multiplexing Access technique

TDMA tech can avoid the packets collision and send the packets more efficient and stable to improve the quality of wireless transmission in long distance.

■ Proprietary Security

This radio uses proprietary protocol, which means other standard wifi products can't connect to this radio. It also provides WEP and WPA2 (AES-128bits) and MAC access control to build the highest security mechanism to prevent the malicious attacking from the internet.

■ Antenna Alignment (Audible antenna alignment for optional)

The site survey function provides the RSSI (signal strength) info to indicate the status of antenna alignment. Customer can do the antenna alignment by the headphone of mp3 player, quite easy and simple.

■ FETURES

- Provides the easy installation and high performance outdoor PTP / PTMP wireless backhaul.
- Technique operating in the 400MHz / 873MHz licensed band.
- Transmit Power Control :

Supports settable transmit power levels to adjust coverage cell size, ranging f from full, half(50%), quarter(25%) eighth(12.5%) and min
- Provides WEP-128 bits AES-256 bits as well as MAC access control to increase security.
- Provides Web-based configuration utility, user friendly interface.
- Support SNMP (Simple Network Management Protocol) for management.
- IP-68 rated weather-proof housing

Chapter 2 Hardware Installation

This chapter describes initial setup of the Wireless backhaul.

Warnings



In order to comply with international radio frequency (RF) exposure limits, dish antennas should be laced at a minimum of 8.7 inches (22 cm) from the bodies of all persons. Other antennas should be laced a minimum of 7.9 inches (20 cm) from the bodies of all persons.



Do not work on the system or connect or disconnect cables during periods of lightning activity.



This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.



Ultimate disposal of this product should be handled according to all national laws and regulations.



Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (e.g. U.S.:NFPA 70, National Electrical Code, Article 810, in Canada: Canadian Electrical Code, Section 54).



Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



To meet regulatory restrictions, the radio and the external antenna must be professionally installed. The network administrator or other IT professional responsible for installing and configuring the unit is a suitable professional installer. Following installation, access to the unit should be password protected by the network administrator to maintain regulatory compliance.



The 400MHz / 873MHz licensed band radio and POE injector can be damaged by incorrect power application. Read and carefully follow the installation instructions before connecting the system to its power source.



Follow the guidelines in this chapter to ensure correct operation and safe use of the licensed band radio.

2-1 Product Kit

Before installation, make sure that you the following items:

◆ 400MHz / 873MHz licensed band ODU.....	x 1
◆ Power over Ethernet.....	x 1
◆ Power Adapter.....	x 1
◆ Power Cord.....	x 1
◆ Water-proof connector for SFTP cable.....	x 1
◆ Mounting kit.....	x 1
◆ Product CD.....	x 1
◆ Quick Installation Guide.....	x 1

NOTE: If any of the above items are missing or damaged, please contact your local dealer for support.

System Requirements

2-2 System Requirements

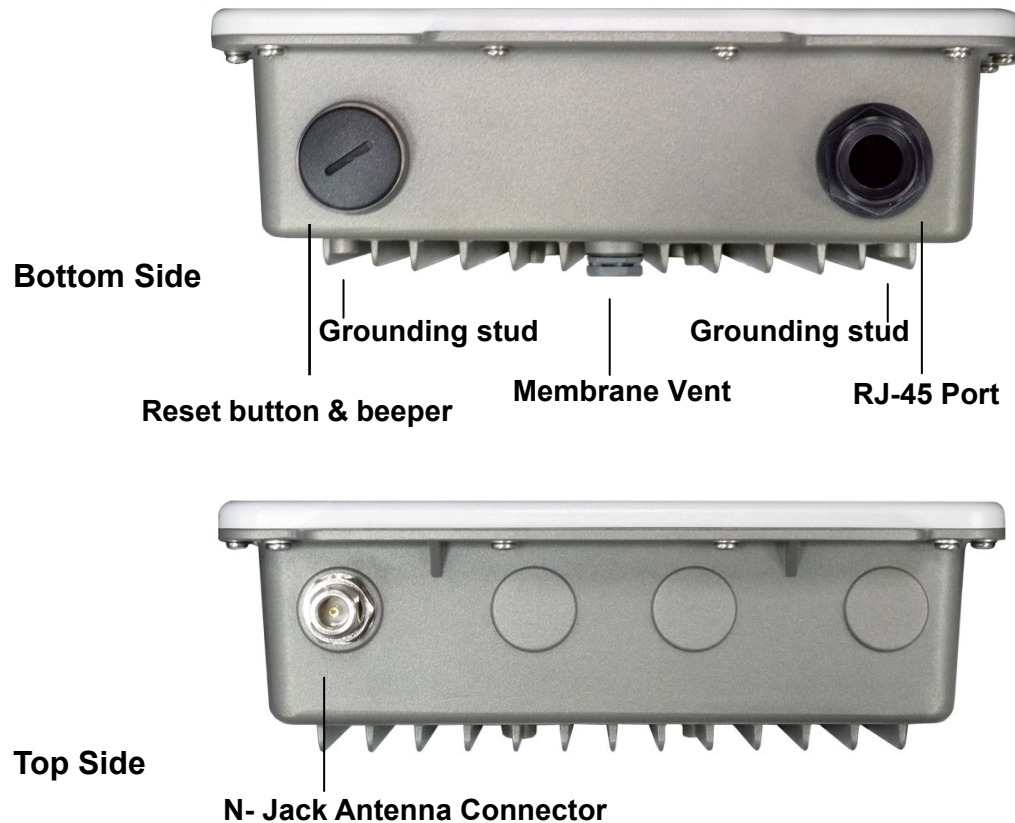
Before installing the long distance wireless backhaul, please make sure that these requirements have been met:

- A 10/100 Mbps Local Area Network device such as a hub or switch. (optional)
- Category 5 UTP or STP networking cable. (From the PC to POE)
- Category 5 SSTP or SFTP networking cable. (From the radio to POE)
- A Web browser for configuration: Microsoft IE 5.0 or later, or Netscape Navigator 5.0 or later version.
- Installing TCP/IP protocol to the computer.

2-3 Mechanical Description

Please refer to the following table for the meaning of each feature.

ODU: (External antenna)



Outdoor Multi-function Radio Figure

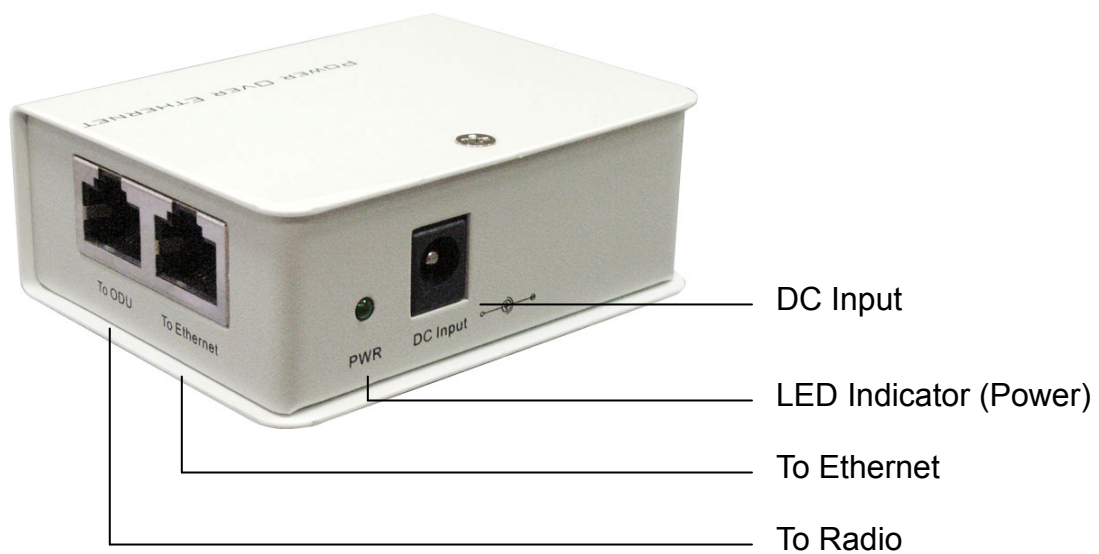
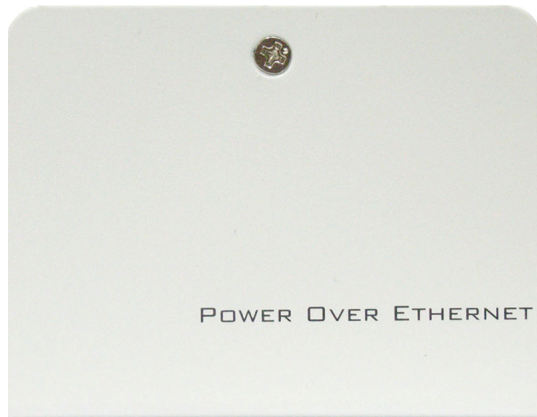
1	RJ-45 Port	Use the SFTP cat.5 cable with weatherproof connector to connect to the "To ODU" side of the POE injector.
2	N- Jack Antenna Connector	Here you can attach the N-type external antenna to the TDMA outdoor radio. In order to improve the RF signal radiation of your antenna, proper antenna installation is necessary.
3	Grounding stud	Connect to the ground conductor with the ground wire.
4	Reset button	Revolve the plastic cap by coin, you will see the reset button. Press it and hold for 5~10 seconds, the radio will back to factory default settings.
5	Beeper	This function only works at adapter mode (or CPE mode) in the AP to CPE application, plug the headphone after remove the plastic cap, and check the signal level of the beeper for antenna alignment via earphone.
6	Membrane Vent	1. Moisture vapor permeable to help aid in condensation and fogging reduction in the ODU. 2. High airflow allows pressure equalization to prevent stress on enclosure seals

Note: screw the cap back well after you use the reset button or beeper.



This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

POE



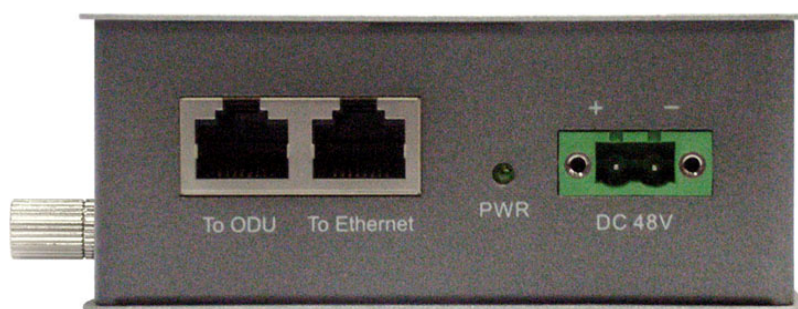
Power Over Ethernet Injector Figure

1	To Ethernet	This RJ-45 port is used to connect to the 10/100 Base T complied device such as switch, router or PC.
2	To ODU	This RJ-45 port is used to connect to the ODU.
3	DC Input	Connect to the Power adaptor for DC input.
4	LED Indicator	Power LED

+/- 48VDC POE (optional solution)



Grounding stud



Power Over Ethernet Injector Figure

1	To Ethernet	This RJ-45 port is used to connect to the 10/100 Base T complied device such as switch, router or PC.
2	To ODU	This RJ-45 port is used to connect to the ODU.
3	DC 48V	Connect to the +/- 48V DC source
4	LED Indicator (PWR)	Power LED
5	Grounding stud	Connect to the ground conductor with the ground wire.



Power Over Ethernet Injector is not a waterproof unit, should not be exposed to outdoor without any protection.

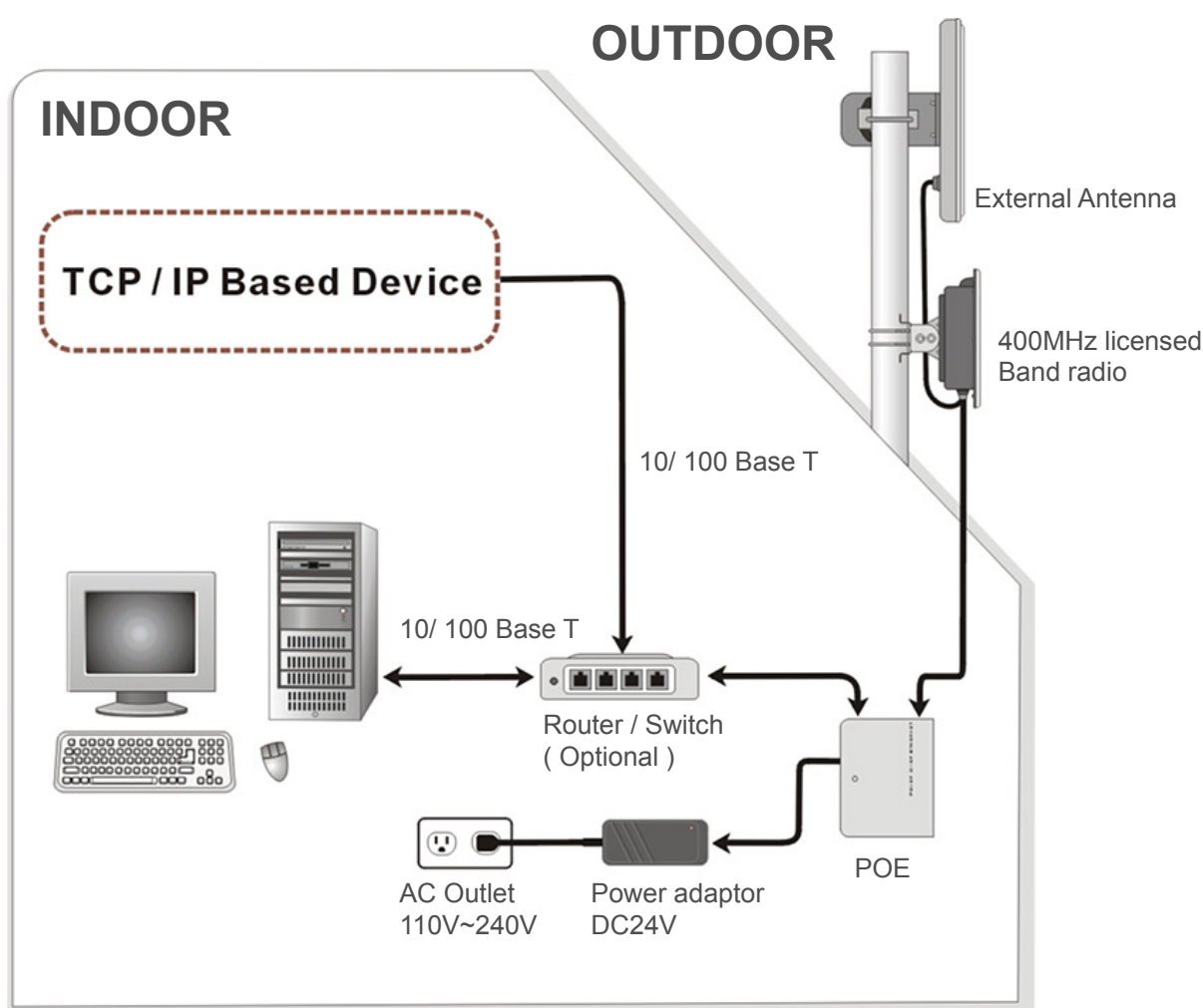
2-4 Hardware Installation

The 400MHz / 873MHz licensed band radio is a radio device, so it is susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- IF there is any other 400MHz / 873MHz RF device deployed around the outdoor radio, try to set the channel to the non-overlapping one.
- Install the bridge at a height sufficient place where structures, trees, or hills do not obstruct radio signals to and from the unit. A clear line-of-sight path can guarantee the performance of the RF link.

■ Site Surveys

Clear and flat area provide better RF range and data rate, on the contrary, physical obstructions such as trees, electric tower, hills or buildings can reduce the performance of RF devices. Do not deploy your radios in the location where there is any obstacle between the antennas.



Hardware Installation Figure



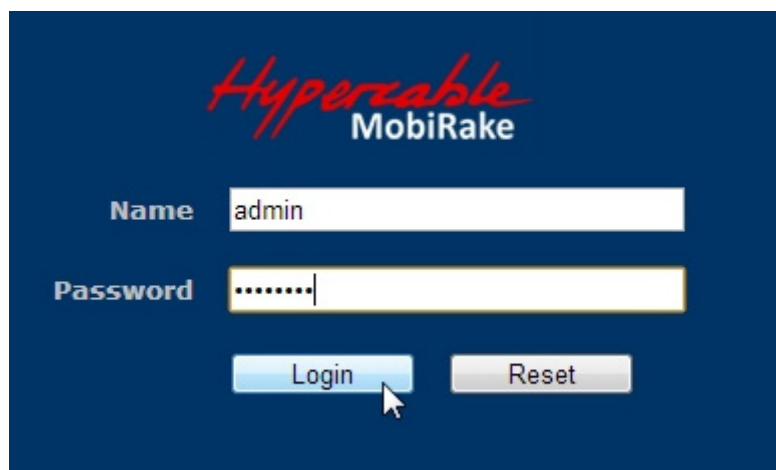
Configure and verify the 400MHz / 873MHz licensed band radio operations first before you mount the radio in a remote location.

Chapter 3 Configuration

3-1 Start-up and Log in

In order to configure the long distance backhaul, use the web browser and please do the following:

1. Type the IP address **http://192.168.1.1** of this radio in the Location (for IE) or Address field and press Enter.
2. Enter the system name (the default setting is “**admin**”) and password (the default setting is “**password**”).
3. Click on the “**Login**” button.



The image shows the login interface for Hyperxable MobiRake. It has a dark blue background with the Hyperxable logo in red script and 'MobiRake' in white. There are two input fields: 'Name' with 'admin' entered and 'Password' with '.....' entered. Below the fields are two buttons: 'Login' (highlighted with a mouse cursor) and 'Reset'.

After you have logged-in the main page, the **About**, **Basic Setup**, **Wireless Setup**, **Status**, **Statistics**, **Management** and **Logout** buttons will be shown. The main menu provides links to the whole sections of the web configuration interface.

About

The About screen describes the product information briefly. Information of the radio includes **Device Name**, **MAC Address**, and **Firmware Version** information.



The image shows the 'About' screen of the Hyperxable MobiRake web interface. On the left is a dark blue sidebar with a menu containing 'About', 'Basic Setup', 'Statistics', 'Wireless Setup', 'Management', and 'Logout'. The main content area has a light green background and displays the following information:

Device Information	
Device Name	DEVICE270081
MAC Address	00:1b:5c:00:0b:50

Firmware	
Version	1.22
Checksum	f0f25363
Build Time	Fri Apr 15 17:46:05 2011

Basic Setup / IP Setup

The screenshot shows the 'IP Settings' configuration window. The sidebar on the left is dark blue with white text for the menu items. The main configuration area has a light green background. The 'Device Name' field contains 'DEVICE270081'. The 'Ethernet Data Rate' is set to 'Automatic'. The 'VLAN(802.1Q)' section has 'Enable' selected. The 'Management VLAN ID' is '0'. The 'IP Address' section has 'Manual' selected. The 'IP Address' field contains '192.168.1.1', 'IP Subnet Mask' is '255.255.255.0', 'Default Gateway' is '0.0.0.0', 'Primary DNS Server' is '0.0.0.0', and 'Secondary DNS Server' is '0.0.0.0'. 'Apply' and 'Cancel' buttons are at the bottom right.

The **Device Name** is used to give a name to your Wireless backhaul. This will enable you to manage your Wireless backhaul more easily if you have multiple radios on your network.

Ethernet Data Rate: you can choose the Ethernet data rate you need

A dropdown menu for 'Ethernet Data Rate' with three visible options: 'Automatic' (highlighted in blue), 'T-base10Mbps', and 'T-base100Mbps'.

VLAN (802.1Q): enable this feature and assign a management Vlan ID to the radio. Those PC without same Vlan ID will not be allowed to connect this radio and configure it.

IP Address: Type the IP address you want to set to your Wireless backhaul. (Default: 192.168.1.1).

IP Subnet Mask: The Wireless backhaul's Subnet Mask must be the same as your Ethernet network. We recommended that you do NOT change the value. (Default: 255.255.255.0).

Default Gateway: The Wireless backhaul will use this value for default Gateway.

Primary DNS Server: The Wireless backhaul will use this value for primary Domain Name Server.

Secondary DNS Server: The Wireless backhaul will use this value for secondary Domain Name Server.

Basic Setup / STP Setup

Spanning tree protocol (STP): You may Enable or Disable the Spanning Tree Protocol used in this radio.

The screenshot shows the Hyperable MobiRake web interface. On the left is a navigation menu with links: About, Basic Setup, IP Setup, STP Setup, Statistics, Wireless Setup, Management, and Logout. The main content area is titled "Spanning Tree Protocol Settings". It contains the following fields:

- Spanning Tree Protocol (STP):** Radio buttons for "Enable" (selected) and "Disable".
- Bridge Priority (0-65535):** Text input field with the value "32768".
- Hello Time (1-10):** Text input field with the value "2", followed by "seconds".
- Max Age (6-40):** Text input field with the value "20", followed by "seconds".
- Forward Delay (2-30):** Text input field with the value "2", followed by "seconds".
- Advanced:**
 - Wireless Node Aging (15-600):** Text input field with the value "15", followed by "seconds".

At the bottom of the settings area are "Apply" and "Cancel" buttons.

Note: If you complete the settings, please click on "Apply" for changes to take effect.

3-2 Wireless Setup

Wireless Setup / Radio Settings

The screenshot shows the Hyperable MobiRake web interface. On the left is a navigation menu with links: About, Basic Setup, Statistics, Wireless Setup, Radio, Security, Flow Control, Status, Throughput, Management, and Logout. The main content area is titled "Radio Settings". It contains the following fields:

- Radio Frequency (RF):** Radio buttons for "Enable" (selected) and "Disable".
- Operating Mode:** Dropdown menu set to "Base Station".
- Group Name:** Text input field with the value "My Network".
- Time Slot (10 - 100):** Text input field with the value "10", followed by "ms".
- Upload Stream Time Ratio (20 - 80):** Text input field with the value "50", followed by "%".
- Basic Parameters:**
 - RF Bandwidth:** Dropdown menu set to "5MHz".
 - Channel / Frequency:** Dropdown menu set to "460.000MHz".
 - TX Rate Range:** Dropdown menu set to "BPSK 1/2" - "64QAM 3/4".
 - TX Power:** Dropdown menu set to "full".
 - Fragmentation Length (276-2346):** Text input field with the value "2346", followed by a checked "Auto" checkbox.
 - Antenna:** Dropdown menu set to "Fixed on Primary".

At the bottom of the settings area are "Apply" and "Cancel" buttons.

Base Station mode - 400MHz

Hyperable
MobiRake

About
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Statistics
Wireless Setup
Radio
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Flow Control
Status
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Logout

Radio Settings

Radio Frequency (RF)
☒ Enable
☐ Disable

Operating Mode
CPE

Group Name
My Network

☐ Only Base Station
00 : 00 : 00 : 00 : 00 : 00

Basic Parameters

RF Bandwidth
5MHz

Channel / Frequency
460.000MHz

TX Rate Range
BPSK 1/2 - 64QAM 3/4

TX Power
full

Fragmentation Length (276-2346)
2346
☒ Auto

Antenna
Fixed on Primary

Apply
Cancel

CPE mode – 400MHz

Hyperable
MobiRake

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Logout

Radio Settings

Radio Frequency (RF)
☒ Enable
☐ Disable

Operating Mode
Base Station

Group Name
My Network

Time Slot (10 - 100)
10 ms

Upload Stream Time Ratio (20 - 80)
50 %

Basic Parameters

RF Bandwidth
5MHz

Channel / Frequency
873.000MHz

TX Rate Range
BPSK 1/2 - 64QAM 3/4

TX Power
full

Fragmentation Length (276-2346)
2346
☒ Auto

Antenna
Fixed on Primary

Apply
Cancel

Base Station mode - 873MHz

Hyperable
MobiRake

About
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Statistics
Wireless Setup
Radio
Security
Flow Control
Status
Throughput
Management
Logout

Radio Settings

Radio Frequency (RF) ☒ Enable ☐ Disable

Operating Mode: CPE

Group Name: My Network

☐ Only Base Station

Basic Parameters

RF Bandwidth: 5MHz

Channel / Frequency: 873.000MHz

TX Rate Range: BPSK 1/2 - 64QAM 3/4

TX Power: full

Fragmentation Length (276-2346): 2346 ☒ Auto

Antenna: Fixed on Primary

Apply Cancel

CPE mode - 873MHz

Radio Frequency (RF): You can enable / disable the RF interface.

Group Name: Base station and CPEs in same network must have the same Group name.

Operating Mode:

Base Station : The default mode is Base Station.

CPE : Perform as a client station associated to other APs. Be sure that they share the same SSID when connected.

Time Slot: Time slot divide using time between every client, default is 10ms. (only available in base station mode)

Upload Stream Time Ratio: Decide upload packet time ratio of every time slot, default is 50%. (only available in base station mode)

Only Base Station: Set the MAC of base station, this CPE can only connect to the base station with this MAC address. (Only available in CPE mode)

RF Bandwidth: Decide bandwidth of Radio Frequency. There are two options for 400MHz -- 5 / 10 MHz, default is 5MHz. 873MHz radio only support 5MHz channel BW.

Channel / Frequency: Configure the channel (frequency) of radio. Only one channel for 873MHz radio.

450.000MHz
 455.000MHz
 460.000MHz
465.000MHz
 470.000MHz
 475.000MHz
 480.000MHz
 485.000MHz
 490.000MHz
 495.000MHz
 500.000MHz

TX Rate Range: Normally choice transmission rate as “Best”, system will adapt best rate for real environment.

Including:

64QAM 3/4, (54Mbps)
 64QAM 2/3, (48Mbps)
 16QAM 3/4, (36Mbps)
 16QAM 1/2, (24Mbps)
 QPSK 3/4, (18Mbps)
 QPSK 1/2, (12Mbps)
 BPSK 3/4, (9Mbps)
 BPSK 1/2, (6Mbps)

TX Power :

Setting power of TX, default is Full

Half: -3 dBm from full

Quarter: -6 dBm from full

Eighth: -9 dBm from full

Min: -12 dBm from full

Fragmentation packet length:

Decide the length of the maximum fragmentation packet. When packet is large than setting, it would divide to smaller segment package. By default, it will divide the length of segment packet automatic

Security/Cipher

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About
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Security Settings

Cipher: NONE

Cipher Phrase:

Isolate Connected CPEs: ☐ Enable ☒ Disable

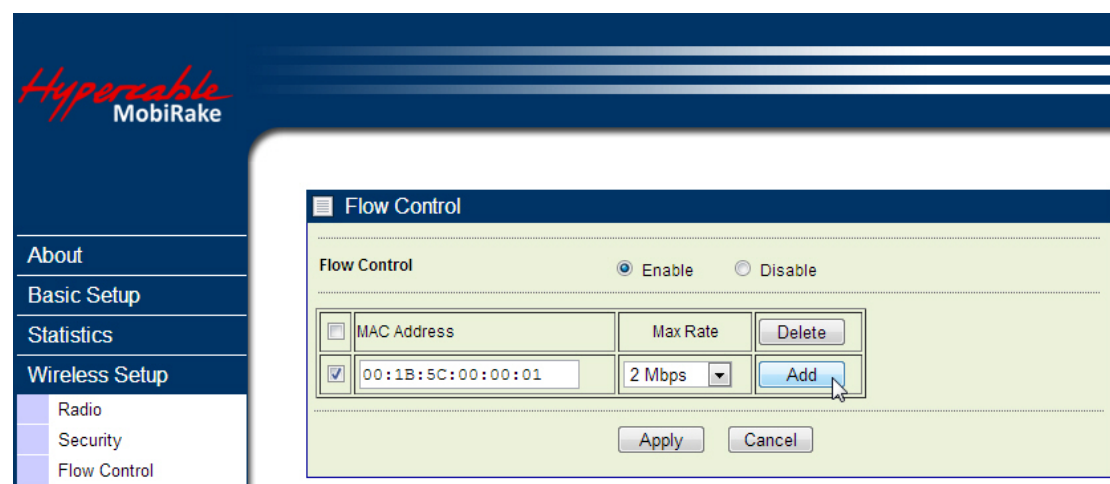
Apply Cancel

Security: To prevent unauthorized radios from accessing data transmitted over the link, the Encryption Settings window offers WEP/AES features, making your data transmission over air more secure and allows you to specify Encryption Key(s) if you enable encryption for the radio. There are three degrees of encryption could be selected: **NONE, 128 bits WEP and 256 bits AES.**

NONE
WEP
AES

Cipher Phrase: After you select the encryption, please key-in the same phrase in this field of the both radios (local and remote) and then press apply, radio will generate a password automatically.

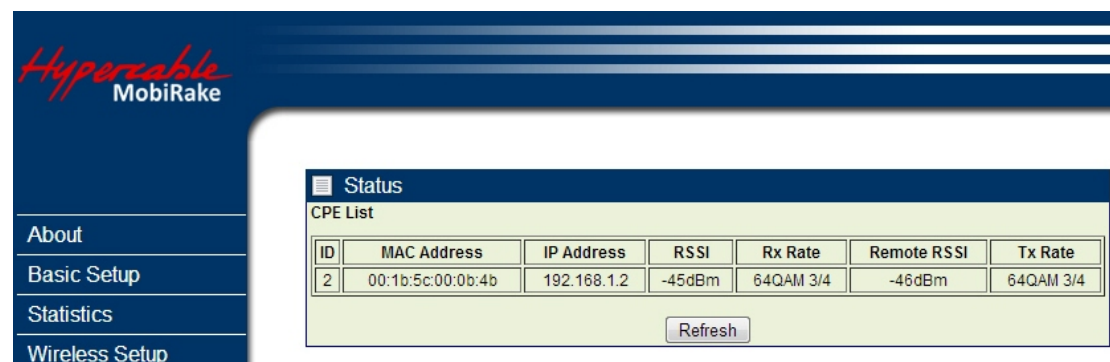
Flow control Flow control is the process of managing the rate of data transmission between two nodes to prevent a fast sender from outrunning a slow receiver. It provides a mechanism for the receiver to control the transmission speed, so that the receiving node is not overwhelmed with data from transmitting node.



PS. this function only available in Base Station mode

Status

The status page of Base station mode provides below information from remote CPEs: **MAC Address, IP Address, RSSI, Rx rate, remote RSSI**(RSSI value of remote CPEs – for easier antenna alignment in the field), **Tx rate.**



Base Station Mode

The status page of CPE mode provides below information from remote Base station:
Group Name, MAC Address, Channel, Encryption, RSSI, IP Address, Rx rate, remote RSSI (RSSI value of BS – for easier antenna alignment in the field), Tx rate.

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[About](#)
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 Radio
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 Status

Status

Base Station List

	Index	Group Name	MAC Address	Channel	Encryption	RSSI	IP Address	Rx Rate	Remote RSSI	Tx Rate
<input checked="" type="radio"/>	1	My Network	00:1b:5c:00:0b:50	460.000MHz	Disable	-44dBm	192.168.1.21	64QAM 3/4	-45dBm	64QAM 3/4

CPE Mode – 400MHz

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Status

Base Station List

	Index	Group Name	MAC Address	Channel	Encryption	RSSI	IP Address	Rx Rate	Remote RSSI	Tx Rate
<input checked="" type="radio"/>	1	My Network	00:1b:5c:00:0b:50	873.000MHz	Disable	-44dBm	192.168.1.21	64QAM 3/4	-43dBm	64QAM 3/4

CPE Mode – 873MHz

Statistics

The Statistics screen provides various Ethernet and Wireless TX/RX packet statistics. Click the **Refresh** button to update the statistics on this screen.

	Received	Transmitted
Packets	4120	5861
Bytes	302998	442759

	Received	Transmitted
Unicast Packets	3867	1115553
Broadcast Packets	1024	197069
Multicast Packets	1423	1508
Total Packets	6314	1314130
Total Bytes	543866	80716556

Refresh

3-4 Management

Management / Change Password

Here allow you to change the Wireless backhaul's password.

Current Password:

New Password:

Repeat New Password:|

Restore Default Password: ☐ Yes ☒ No

Apply Cancel

To change the password of the Wireless backhaul, do the following:

1. To change the current password, choose the "Change Password" option from the "Management" section in the Wireless backhaul's left page. Key-in the default password "password" in the "Current Password" filed.
2. Changing password for the Wireless backhaul is as easy as typing the password into the New Password field. Then, type it again into the Retype New Field to conf

Click the “Apply” button to save the setting.

3. You can restore to default password too by check the “yes” option.

Note: After you change password, please take note of your new password. Otherwise, you will not able to access the Wireless backhaul setup.

Management / Upgrade Firmware

The Upgrade Firmware menu will display the Upgrade Firmware window so that you could update the latest firmware on the Wireless backhaul.

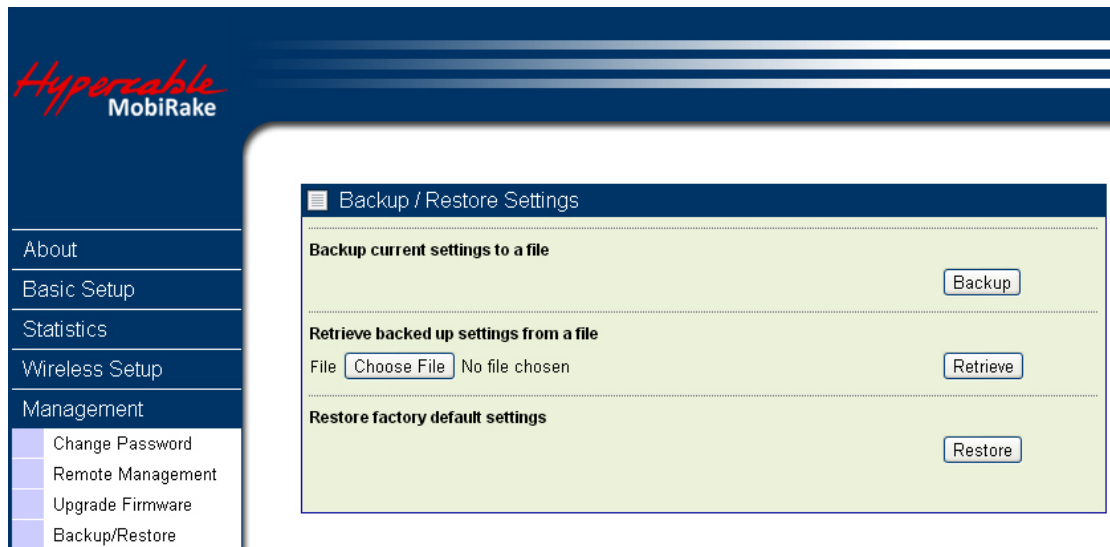
Please make sure that you have downloaded the latest and correct firmware from the website before upgrading the firmware of the Wireless backhaul.

To upgrade the latest firmware, complete the following:

- Using browser to access the main page of the Wireless backhaul.
 1. Select “Upgrade Firmware” from the **Management** section.
 2. Input the exact file path and name or select the file by clicking **Browse** button, then press **Upload** button to upgrade the firmware.
 3. Please wait for few seconds.
- If download fail, please repeat the step 1~3 to download again.

Note! Do not power off the unit when it is being upgraded.

Management / Backup / Restore Settings



Management / Time Setting


The current system settings can be saved into a file as a backup by clicking “**Backup**”. The saved file can be loaded back on the radio by clicking “**Browse**”. When you have selected the settings file, click “**Retrieve**” to begin the process. Furthermore, you may click “**Restore**” to factory default settings.

Time: While you connect this Wireless backhaul to Internet, it could automatically synchronize the current time with the Time Server that you have set.

Time Server: the central time of the Time Server.

Time Server Port: the port of the Time Server.

Time Zone: You may select the appropriate local time zone for your radio from a list of all available time zones. Default: GMT.



- About
- Basic Setup
- Statistics
- Wireless Setup
- Management
 - Change Password
 - Remote Management
 - Upgrade Firmware
 - Backup/Restore
 - Time Setting

Time Setting

Time

Time Server

Time Server Port

Time Zone

☐ Adjust for Daylight Saving Time

Current Time Fri Apr 15 18:49:01 2011

(GMT-12:00) International Date Line West
(GMT-11:00) Midway Island, Samoa
(GMT-10:00) Hawaii
(GMT-09:00) Alaska
(GMT-08:00) Pacific Time (US & Canada); Tijuana
(GMT-07:00) Arizona
(GMT-07:00) Chihuahua, La Paz, Mazatlan
(GMT-07:00) Mountain Time (US & Canada)
(GMT-06:00) Central America
(GMT-06:00) Central Time (US & Canada)
(GMT-06:00) Guadalajara, Mexico City, Monterrey
(GMT-06:00) Saskatchewan
(GMT-05:00) Bogota, Lima, Quito
(GMT-05:00) Eastern Time (US & Canada)
(GMT-05:00) Indiana (East)
(GMT-04:00) Atlantic Time (Canada)
(GMT-04:00) Caracas, La Paz
(GMT-04:00) Santiago
(GMT-03:30) Newfoundland
(GMT-03:00) Brasilia
(GMT-03:00) Buenos Aires, Georgetown
(GMT-03:00) Greenland
(GMT-02:00) Mid-Atlantic
(GMT-01:00) Azores
(GMT-01:00) Cape Verde Is.
(GMT) Casablanca, Monrovia
(GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
(GMT+01:00) Brussels, Copenhagen, Madrid, Paris

Management / Event Log

Enable SysLog if you have a Syslog Server on your network environment. If enable, you need to input the Syslog Server IP Address (default is 0.0.0.0) and the port number your Syslog Server is configured to use. The default port number is 514. The Event Log Window lists Wireless backhaul events. Click on “Refresh” to update the network events or “Save As...” to save the event into a file on your computer. Click “Apply” if you made any changes.

The screenshot shows the 'Event Log' configuration window in the Hyperable MobiRake web interface. On the left is a navigation menu with options: About, Basic Setup, Statistics, Wireless Setup, Management (selected), and Logout. Under 'Management', there are sub-options: Change Password, Remote Management, Upgrade Firmware, Backup/Restore, Time Setting, Event Log (selected), and Reboot. The main window has a title bar 'Event Log'. Inside, there is a checkbox 'Enable SysLog' which is checked. Below it are two input fields: 'Syslog Server IP Address' with the value '192.168.1.210' and 'Syslog Server Port Number' with the value '514'. There are 'Apply' and 'Cancel' buttons. Below these is a section titled 'Event Log Window' containing a list of log entries. At the bottom of the window are 'Refresh' and 'Save As...' buttons.

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Event Log

☒ Enable SysLog

Syslog Server IP Address: 192.168.1.210

Syslog Server Port Number: 514

Apply Cancel

Event Log Window

Fri Apr 15 17:49:53 2011 WLAN0: Station 00:1B:5C:00:0B:4B associated.
Fri Apr 15 17:48:20 2011 WLAN0: Station 00:1B:5C:00:0B:4B associated.
Fri Apr 15 17:46:15 2011 WLAN0: 00:1B:5C:00:0B:50 is ready in service.
Fri Apr 15 17:46:15 2011 WLAN0: 00:1B:5C:00:0B:50 stop service.
Fri Apr 15 17:46:10 2011 WLAN0: 00:1B:5C:00:0B:50 is ready in service.
Fri Apr 15 17:46:10 2011 WLAN0: 00:1B:5C:00:0B:50 stop service.
Fri Apr 15 17:46:10 2011 WLAN0: 00:1B:5C:00:0B:50 is ready in service.

Refresh Save As...

Management / Reboot

The Reboot screen enables you to reboot your Wireless backhaul. If any changes are made and you want them to take effect, you need to reboot the Wireless backhaul. Select the “Yes” check box and click “Apply”. It will take you about 50 seconds to go through reboot. The Web-browser will not be accessible until the Wireless backhaul has finished its reboot process.

The screenshot shows the 'Reboot' configuration window in the Hyperable MobiRake web interface. On the left is a navigation menu with options: About, Basic Setup, Statistics, Wireless Setup, Management (selected), and Logout. Under 'Management', there are sub-options: Change Password, Remote Management, Upgrade Firmware, Backup/Restore, Time Setting, Event Log, and Reboot (selected). The main window has a title bar 'Reboot'. Inside, there is a label 'Reboot System' followed by two radio buttons: 'Yes' and 'No'. The 'No' radio button is selected. There are 'Apply' and 'Cancel' buttons at the bottom.

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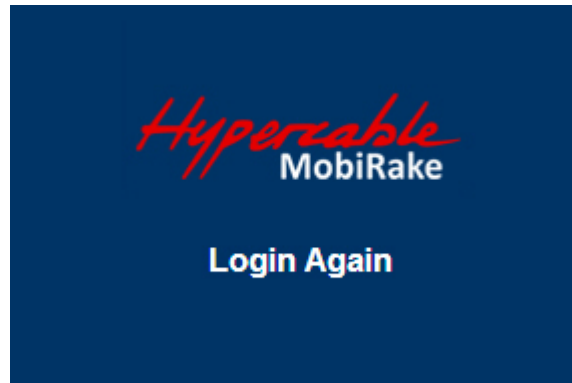
Reboot

Reboot System ☐ Yes ☒ No

Apply Cancel

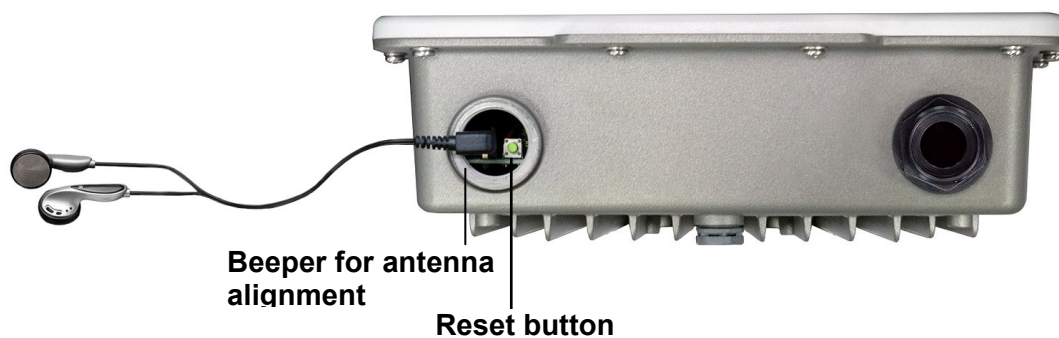
Management / Logout

Click log out when you finished all the configurations, if there is anything missed, you can selected “login again” to enter the configuration process again.



Hardware reset

If your Web User Interface stops responding, ping the IP address of the radio to check whether “reply” is obtained, or unplug and then plug back in the power supply of the Radio. This will reboot the Radio. If you are still unable to communicate with the Web User Interface, remove the plastic cap in the left of radio’s bottom, Then use a stick to press in and hold the RESET button for 6~9 seconds. This will reset the Radio to the factory default settings. If you applied any personal configuration settings, you will need to make the changes again.



Beeper and Reset button of the radio

Appendix A: Trouble shooting

This Appendix helps you to isolate and solve the problems with the 400MHz / 873MHz licensed band radio. Before you start troubleshooting, it is important that you have checked the details in the product user manual and QIG.

In some cases, rebooting the unit clears the problem. If the radio still can't work well, please try to contact your local vendor or supplier.

General Descriptions

To successfully use the radios, engineers must be able to troubleshoot the system effectively. This section will show you how an 400MHz / 873MHz licensed band radio could be analyzed in the case of "no link," usually, we think that the link is down because there is no traffic being passed. The four main reasons that a link may not work are listed as below:

- Configuration
- Path issues (such as distance, obstacles, RF reflection...)
- Personal reasons (careless mounting or the incorrect connection.)
- Hardware (includes the radio, cable and connectors...etc. In few cases, the radio will conflict with the laptop or PC)
- Environment (anything that is outside the equipment and not part of the path itself)

After verified the correct configuration, double-checked the path terms, ensure no personal reasons and the hardware works well in the office, but the user still report that the link does not work. Most likely, the problem reported is caused by the environment or by improper tests to verify the connection. Assumes that the test method, cabling, antennas, and antenna alignment have been checked, (Always ensure this before checking the environment.) then you can do the follow to check the environment.

General Check

Two general checks are recommended before taking any action:

- Check whether the software version at both sides is the most current
- Check for any reported alarm messages in the Event Log

Analyzing the Spectrum

The best way to discover if there is a source of interference is to use the spectrum analyzer. By turning the antenna 360 degrees, you can find out which direction is the interference coming from. It will also show the frequencies and the level of signal is detected.

Avoiding Interference

When a source of interference is identified and when the level and frequencies are known, the next step is to avoid the interference. Some of the following actions can be tried:

- Change the RF channel to the one away from the interference source
- Change the polarization of the antenna; try to change to a polarization different from the interferer.
- A small beam antenna may help. (Such as some grid or dish antenna, align the antenna in to the particular direction will reduce the affects from the interference source) This solution cannot help when the source of interference is right behind the remote site.

Before checking for interference, ensure all the hardware works well and configurations are correct. The path analysis, cabling and antennas should be checked as well.

Connection Issues

This section describes several common troubles the customer might have while setting the radios.

Radio Does Not Boot

When the Radio does not Boot, do the following steps to check your whole system:

1. Ensure that the power supply is properly working and correctly connected.
2. Ensure that all cables are workable and connected correctly.
3. Check the power source.

Cannot use the Web Interface

If the radio boot, but can't enter it via the Web site.

1. Open a command prompt window and enter **ping <ip address unit>** (for example: **ping 192.168.1.1**). If there is no response from the radio, make sure that you the IP address is correct. If there is response, the Ethernet connection is working properly, do the next step.
2. Make sure that you are using one of the following Web browsers:
 - Microsoft Internet Explorer version 5.0 or later
 - Netscape version 5.0 or later.
3. Ensure that you are not using a proxy server for the connection with your Web browser.

Double-check the physical network connections (includes the cables and the connectors). Use a well-known unit to ensure the network connection is properly functioning.

Configuration Issues

The following problems relate to setup and configuration problems.

Some basic configurations might make the link fail, below are the major ones:

- RF Channel
- SSID
- IP address
- Rule of MAC address filter
- Rule of security settings (such as WEP or WPA)
- Rule of authentication (such as settings of radius server and 802.1x)
- Configurations of WDS page

If the links of the two radios works within close distance of each other, then there are two possible reasons why wireless connectivity is not possible while the 400MHz / 873MHz licensed band radios are at their desired locations:

- RF path, for example, a bad antenna alignment, the tower is not tall enough when the radios are installed in a long distance or the connector do not attachment well...etc (these are the most common problems in installations)
- Interference problem caused by a high signal level from another unit. The interference can be checked by changing the frequency and then see if another channel works better. Or you can change the polarization of the antenna as a way of avoiding the interfering signal. To know in advance how much interference is present in a given environment, a Spectrum Analyzer can be attached to a (temporary) antenna for measuring the signal levels on all available Channels.



If the link still not works after resetting the configurations, checking the connectors and cables, double-check the path and environment issues, then the problem is possible a hardware problem. Acquiring a third radio and then testing it amongst the existing units will help to find out the broken unit.



Please contact your local vendor for advance technical support.
