PePWave Surf Series

PePWave MC200

User Manual

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2 Disclaimer

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3 Product Description

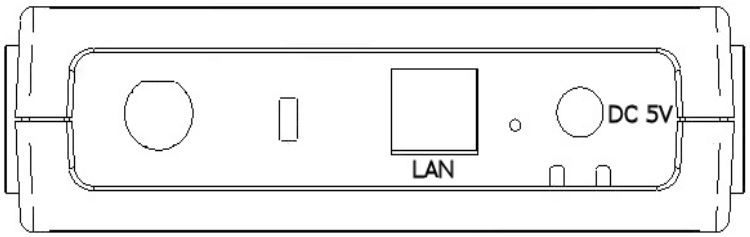
MC200 is a feature-rich Wi-Fi CPE with WPA, WPA2 and 802.1x supplicant support. It is designed to act as a Wireless router and connects LAN users with a Wireless Broadband Internet Service (such as Citywide Wi-Fi).

It associates to a service provider and authenticates using 802.1x (if needed) on start up. Upon successful association and authentication, it will acquire an IP address from the service provider using DHCP. A DHCP server is built-in on its LAN port. Network Address Translation is performed for all outbound connections. Thus it supports multiple terminals to access the Internet simultaneously.

3.1 Features

- 10/100 Ethernet interface with auto-crossover detection
- Reset button for restoring settings to factory defaults
- Signal strength LED for showing the current signal strength
- WPA/WPA2-Personal and WPA/WPA2-Enterprise support
- Network Address Translation (NAT) routing
- Built-in DHCP server
- Inbound port range forwarding
- Integrated Home Wi-Fi Access Point (PePWave Surf AP only)

3.2 Hardware Setup



1. Attach the provided antenna to the left most antenna connector
2. Connect the LAN port to the computer's Ethernet port with an Ethernet cable.
3. Connect the end of the included power adapter to the power socket (labeled "DC 5V") on PePWave Surf.
4. Power on the power adaptor.

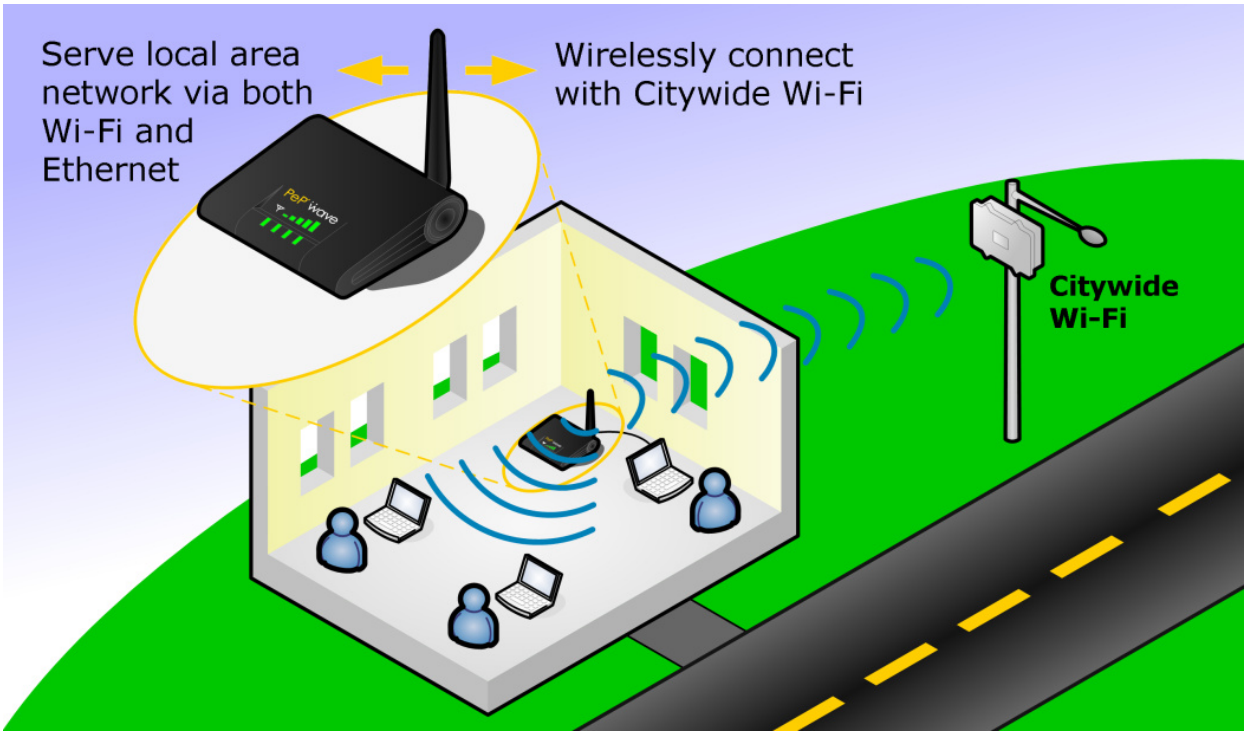
3.3 LED Description

LED	Color	Status	Description
Power	Green	On	Power is on
		Off	Power is off
Status	Green	Solid	Received signal is Excellent, Very Good and Good
	Green	Blinking	Received signal is Low
	Amber	Blinking	Received signal is Very Low
	Amber	Solid	No wireless signal is detected
		Off	Booting up / Upgrading firmware
LAN	Green	On	Ethernet is connected
	Green	Blinking	Sending/Receiving data
		Off	Ethernet is not connected
Wi-Fi	Green	On	Associated with an access point
	Green	Blinking	Sending/Receiving data
		Off	Not associated with any access point
Signal Bars	Green	N/A	The number of lit signal bars depends on the strength of the received signal. A larger number of lit signal bars indicate stronger signals.

3.4 Integrated Home Wi-Fi Access Point

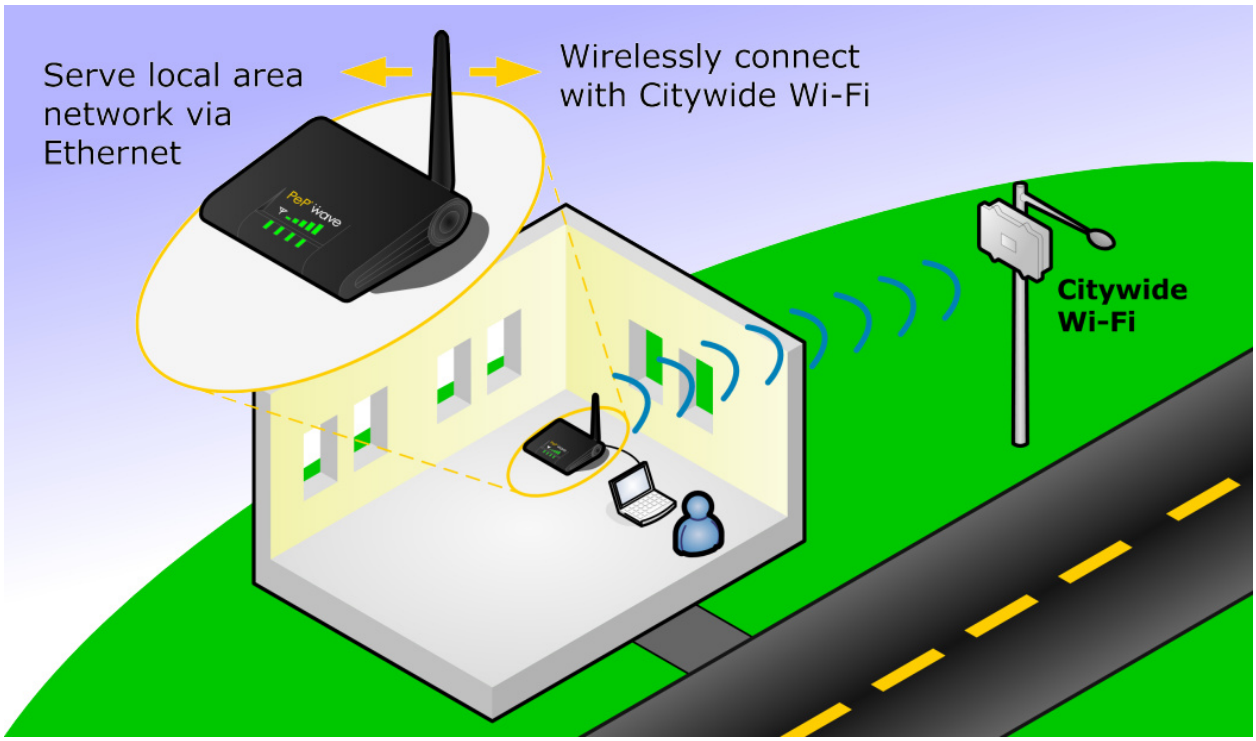
The Integrated Home Wi-Fi Access Point functionality of PePWave Surf AP allows 802.11b/g devices on the customers' premises to wirelessly connect with a PePWave Surf AP unit in order to gain access to Citywide Wi-Fi through PePWave Surf AP.

With PePWave Surf AP, the already existing Ethernet capability of the PePWave Surf Series remains unaffected.



PePWave Surf AP and Integrated Home Wi-Fi Access Point

Previously, PePWave Surf, prior to the introduction of PePWave Surf AP, connects wirelessly at one end with Citywide Wi-Fi, and at the other end through an Ethernet cable with a computer, router, or other equipment on the customers' premises.

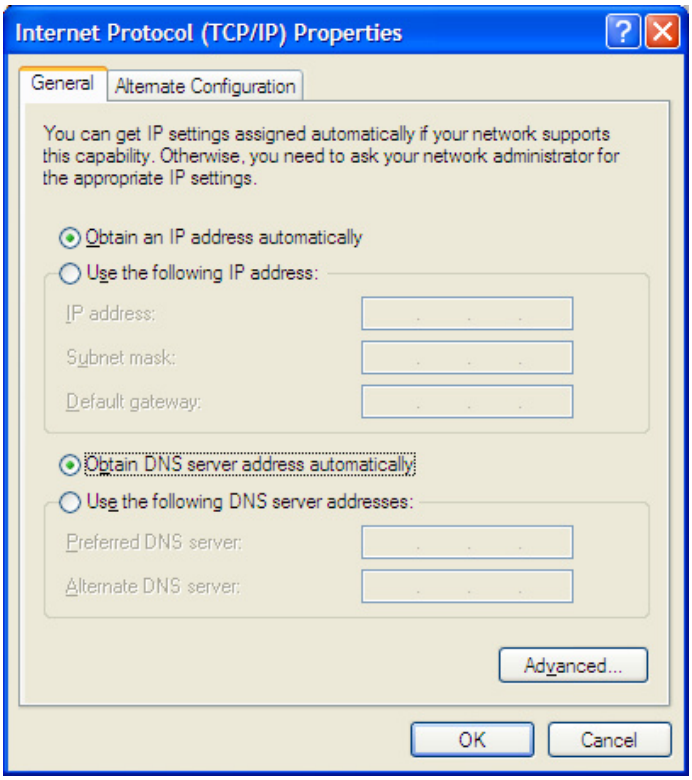


PePWave Surf, prior to the introduction of PePWave Surf AP

4 Using the PePWave MC200

You should set up your computer's LAN interface to obtain an IP address automatically. If you do so, you should have set it up correctly.

In order to do so, select the "Start" menu, "Control Panel" and then "Network Connections". Right click on the "Local Area Connection" icon, choose "Properties", double-click on the item "Internet Protocol (TCP/IP)" from the list. On the screen, just set it as follows:



Click the "OK" button to confirm the change.

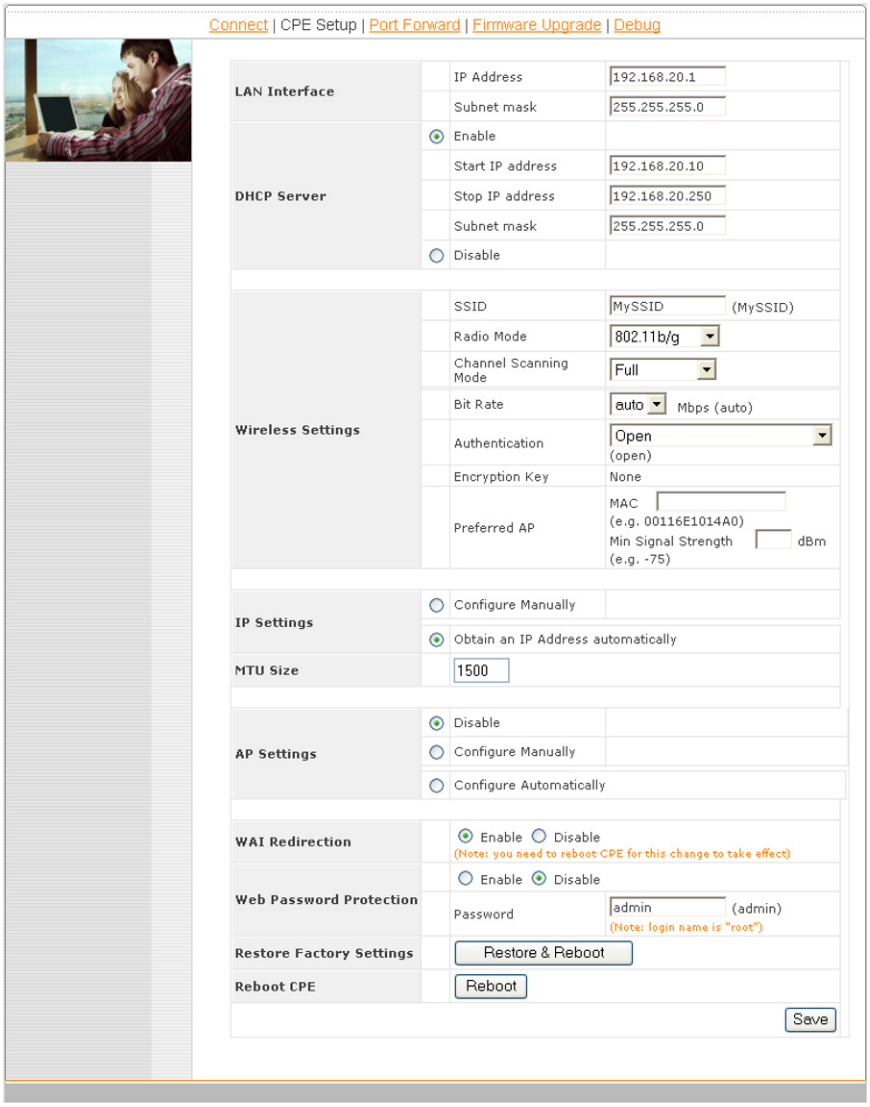
4.1 First Time Setup

On your PC, start a web browser, e.g. Internet Explorer, Mozilla Firefox, etc. Visit an Internet web site. If you are not associated to an access point, you should be redirected to a logon page. Or you can go also go to this URL

http://192.168.20.1/

The page will look like this.

Click the "Advanced Config" button to enter the parameters of the access point to associate to. You should see this screen:

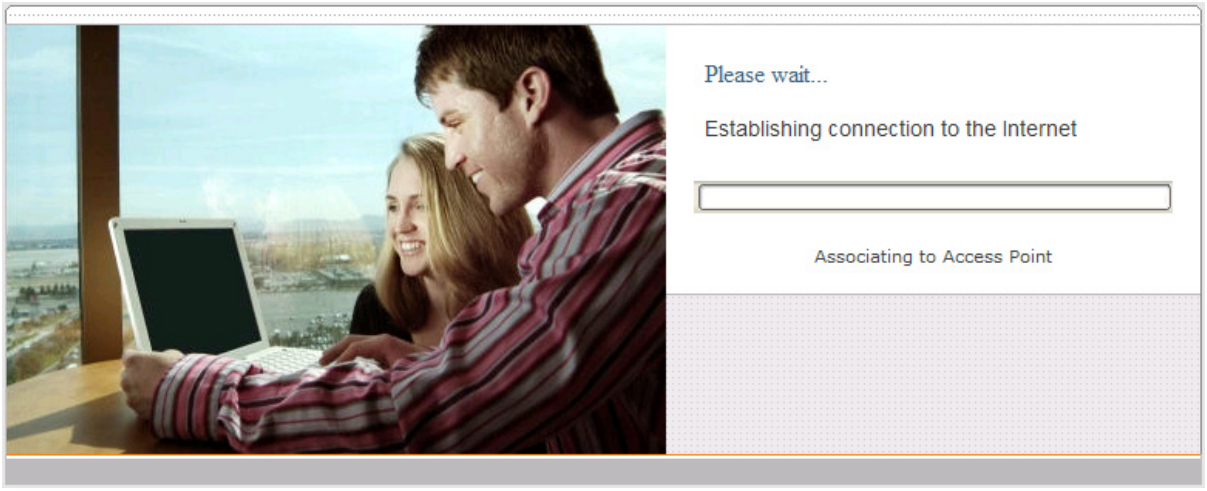


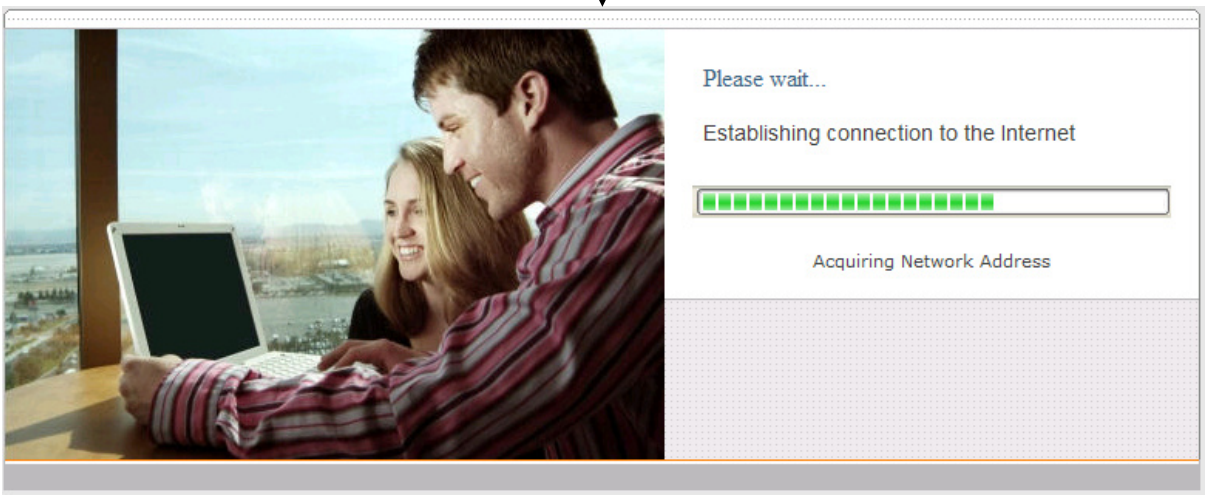
In the field "SSID" under Wireless Settings, input the access point's SSID (sometimes it is called the "network name"). According to the setting of the Access Point you are associating to, you may choose a different "Authentication setting".

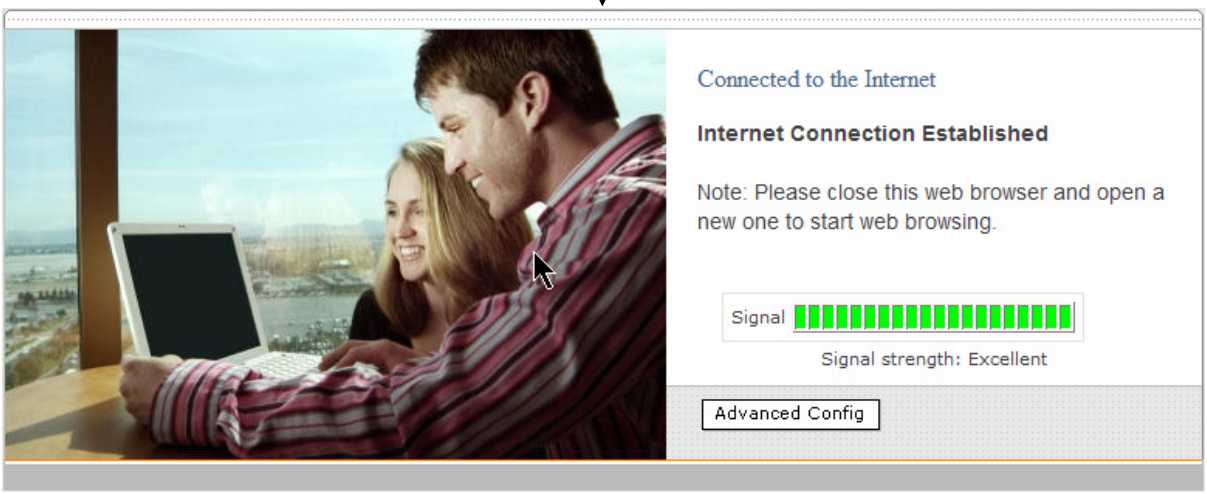
If "Static WEP key" or "WPA/WPA2-Personal" is selected for Authentication, input the Encryption Key field as well. (There are also options of "802.1x with dynamic WEP key" and "WPA/WPA2-Enterprise". You do not need to use these settings unless instructed to do so by your ISP.)

Click the "Save" button at the bottom to complete.

You can now click the "Connect" link on the top bar and then click the "Connect" button to associate with the access point.

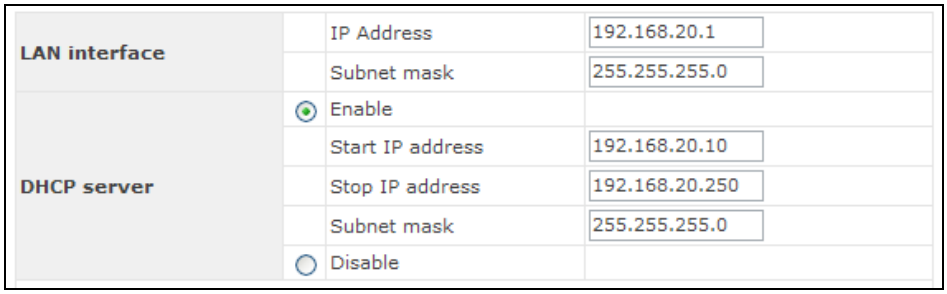






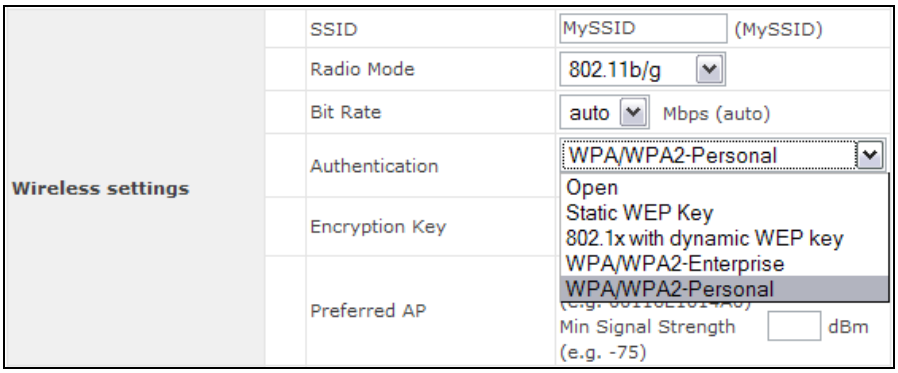
At this point, you are associated with the access point. You may now close the web browser and open a new one to start web browsing.

4.2 Settings Details



LAN Interface: To configure the LAN interface's IP address and subnet mask.

DHCP Server: To configure and enable the built-in DHCP server or not. If enabled, the IP address range can be configured.



Wireless Settings:

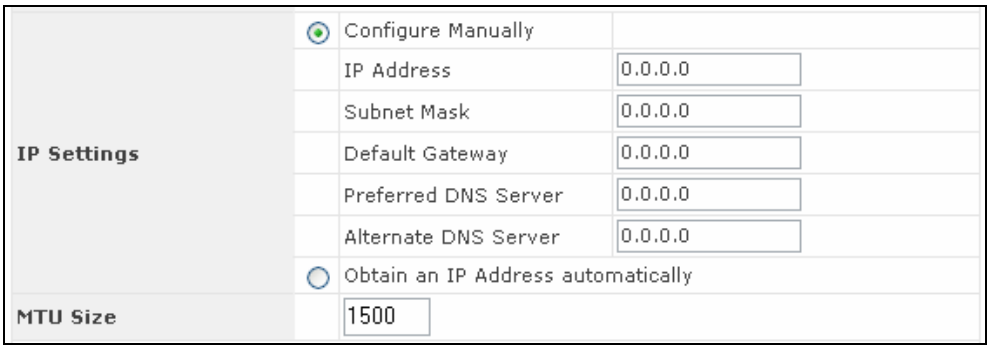
SSID: To configure the SSID / ESSID / Network Name of the wireless network to associate to.

Radio Mode: It allows the user to choose between radio modulations support. E.g. 802.11b/g, 802.11g only, 802.11b, etc. The available settings depend on the Wi-Fi module installed on the device.

Bit Rate: To fix the 802.11 transmit bit rate. Available options depend on the Radio Mode chosen. If "auto" is chosen, the device will choose the best bit rate dynamically and automatically.

Authentication: Available options are Open, Static WEP Key, 802.1x with dynamic WEP key, WPA/WPA2-Enterprise and WPA/WPA2-Personal. The selection should be according to the setting of the access point you are associating to. Data transferred are encrypted under all modes except in Open mode. When Static WEP Key or WPA/WPA2-Personal is chosen, you should enter an encryption key in the Encryption Key field. (You do not need to use 802.1x and WPA/WPA2-Enterprise unless instructed to do so by your ISP.)

Preferred AP: The MAC address of a preferred access point can be entered here. When the preferred access point is found and its signal strength is higher than the "Min Signal Strength", it will connect to this preferred access point, no matter the other access points are found even they have higher signal strength or the same SSID.



IP Settings: The IP address can be obtained automatically or configured manually. If you choose to manually configure the IP address for your unit, enter the fields "IP Address", "Subnet Mask", "Default Gateway", "Preferred DNS Server" and "Alternate DNS Server".

MTU Size: You may also set the MTU Size to increase the data packet size your Surf can handle at one time.

AP Settings: These settings apply only to the PePWave Surf AP model, and configure the properties of the Integrated Home Wi-Fi Access Point. The AP Settings will be covered in detail in the subsequent section **Integrated Home Wi-Fi Access Point Configuration**.

WAI redirection: If the device is not connected to an access point, and the user is accessing an Internet web site, the settings control whether to redirect the web access to the web admin interface page or not. If this is disabled and the device is not connected, the browser will show a web access error message. The user can still access the web admin interface by accessing to the device's LAN IP address. By default, the LAN IP address is set as http://192.168.20.1 .

Web Password Protection: Sets the password to protect the web user interface.

Restore default settings: To restore the device to default settings. When this option is clicked, default settings will be restored and the unit will be restarted.

Reboot: To restart the device.

4.3 Integrated Home Wi-Fi Access Point Configuration

Integrated Home Wi-Fi Access Point is configured via the ***CPE Setup*** tab. The following sections will provide information as a guide through the configuration.

4.3.1 Available Access Point Settings

The available Access Point (AP) settings for the Integrated Home Wi-Fi Access Point functionality are as follows:

- ***Disable***

  Integrated Home Wi-Fi Access Point functionality is disabled

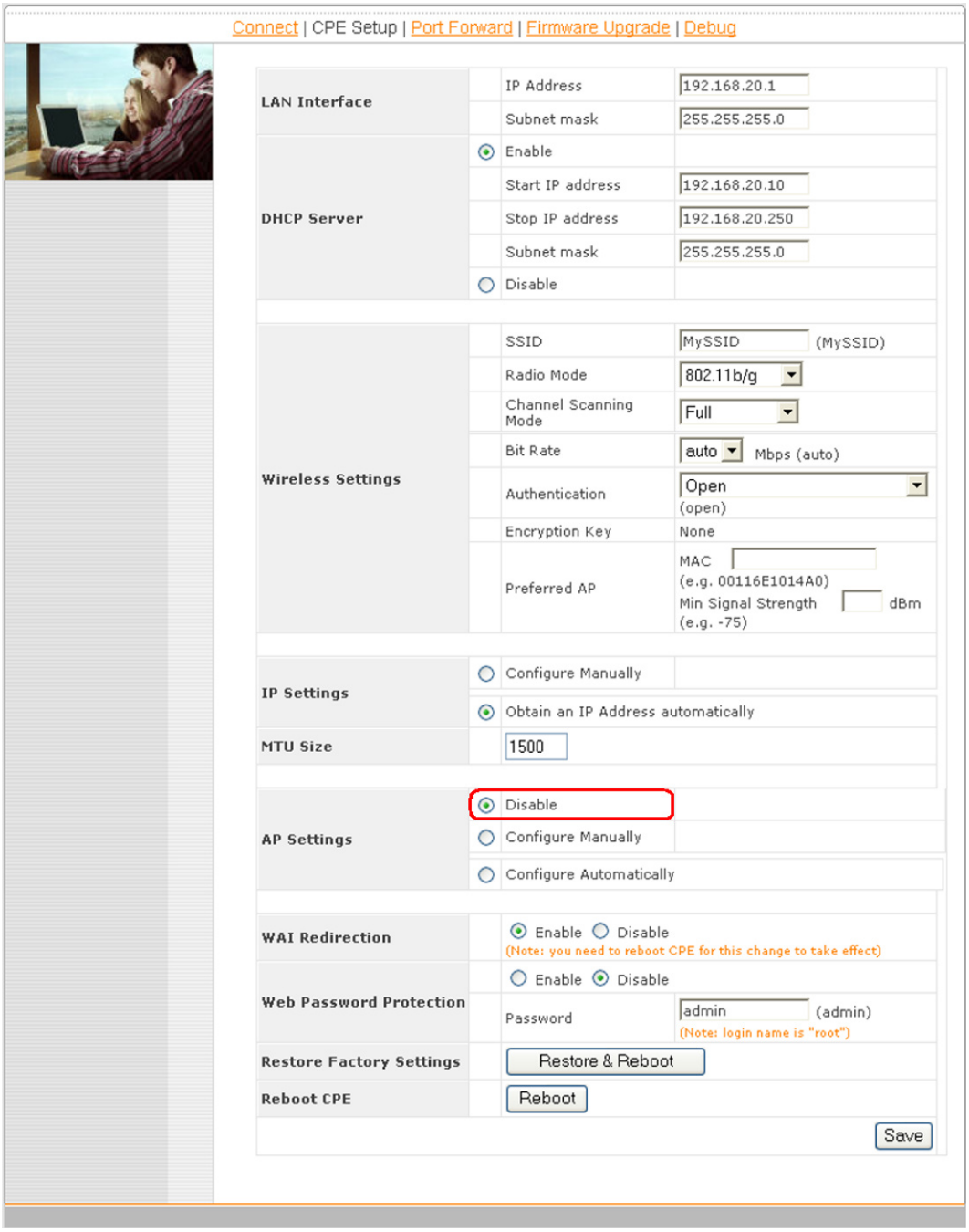
- ***Configure Manually***

  Manual configuration of the SSID, Authentication, and Encryption Key values corresponding to the Access Point.

- ***Configure Automatically***

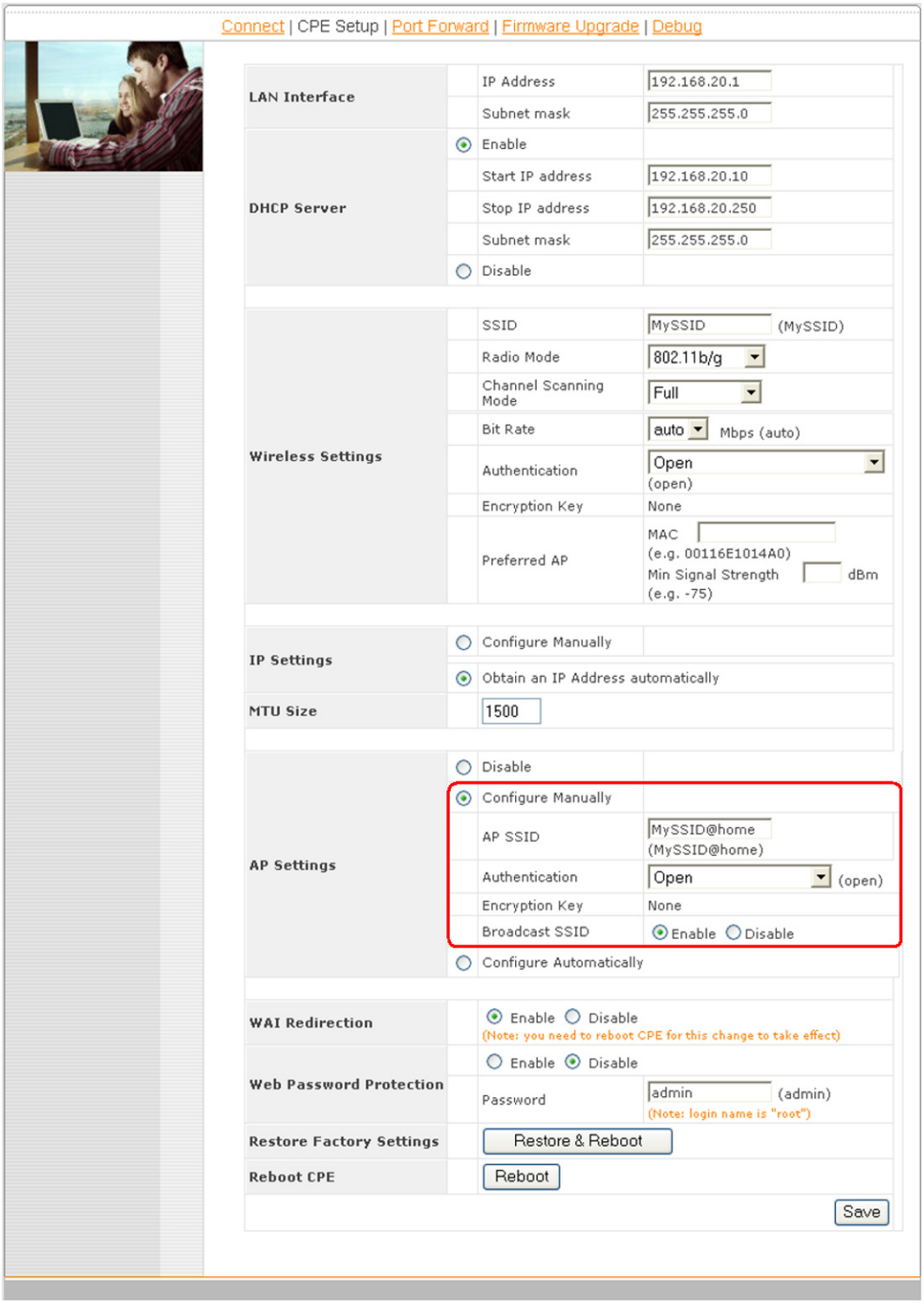
  The SSID, Authentication, and Encryption Key values corresponding to the Access Point are automatically configured to be the same as the respective values that correspond to Citywide Wi-Fi.

4.3.2 Access Point Disabled



Access Point Disabled, as shown with the red marker box

4.3.3 Manual Access Point configuration



Manual Access Point Configuration, as shown with the red marker box

In Manual Configuration mode, the ***SSID*** is manually entered.

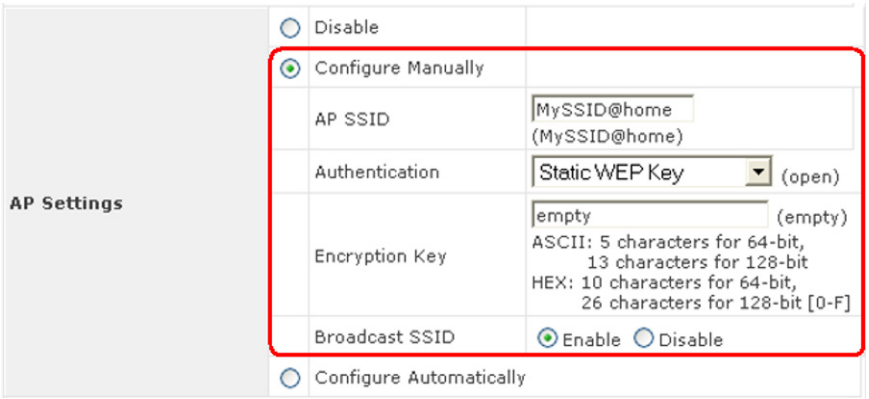
Authentication can be one of three configurable values:

- ***Open***

  For ***Open*** Authentication Mode, no Encryption Key is necessary.

- ***Static WEP Key***

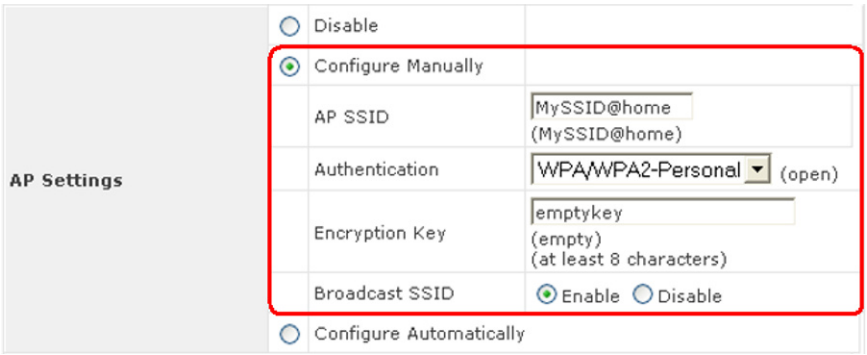
  For ***Static WEP Key*** Authentication Mode, a 64- or 128-bit Encryption Key is required, and can be entered in either an ASCII or HEX representation.



Static WEP Key Authentication Configuration

- ***WPA/WPA2-Personal***

  For ***WPA/WPA2-Personal*** Authentication Mode, an Encryption Key, of at least 8 characters, is required.



WPA/WPA2-Personal Authentication Configuration

Broadcast SSID can be one of two configurable values:

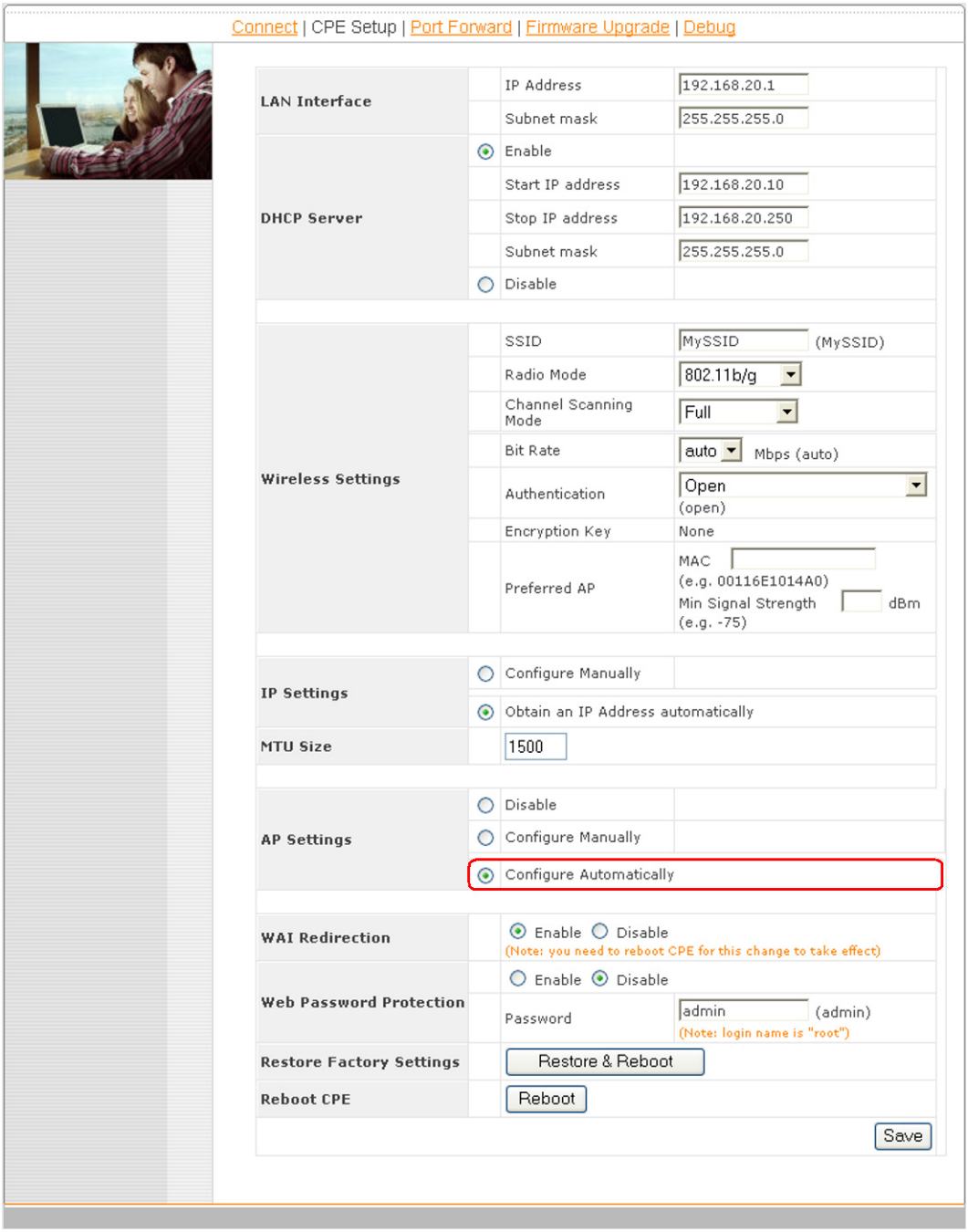
- ***Enable***

  The configured SSID will be broadcast such that it can be detected by an SSID scan.

- ***Disable***

  The configured SSID will not be broadcast such that it cannot be detected by an SSID scan. In order to connect with the access point, the SSID needs to be known by the client.

A.1.1 Automatic Access Point Configuration



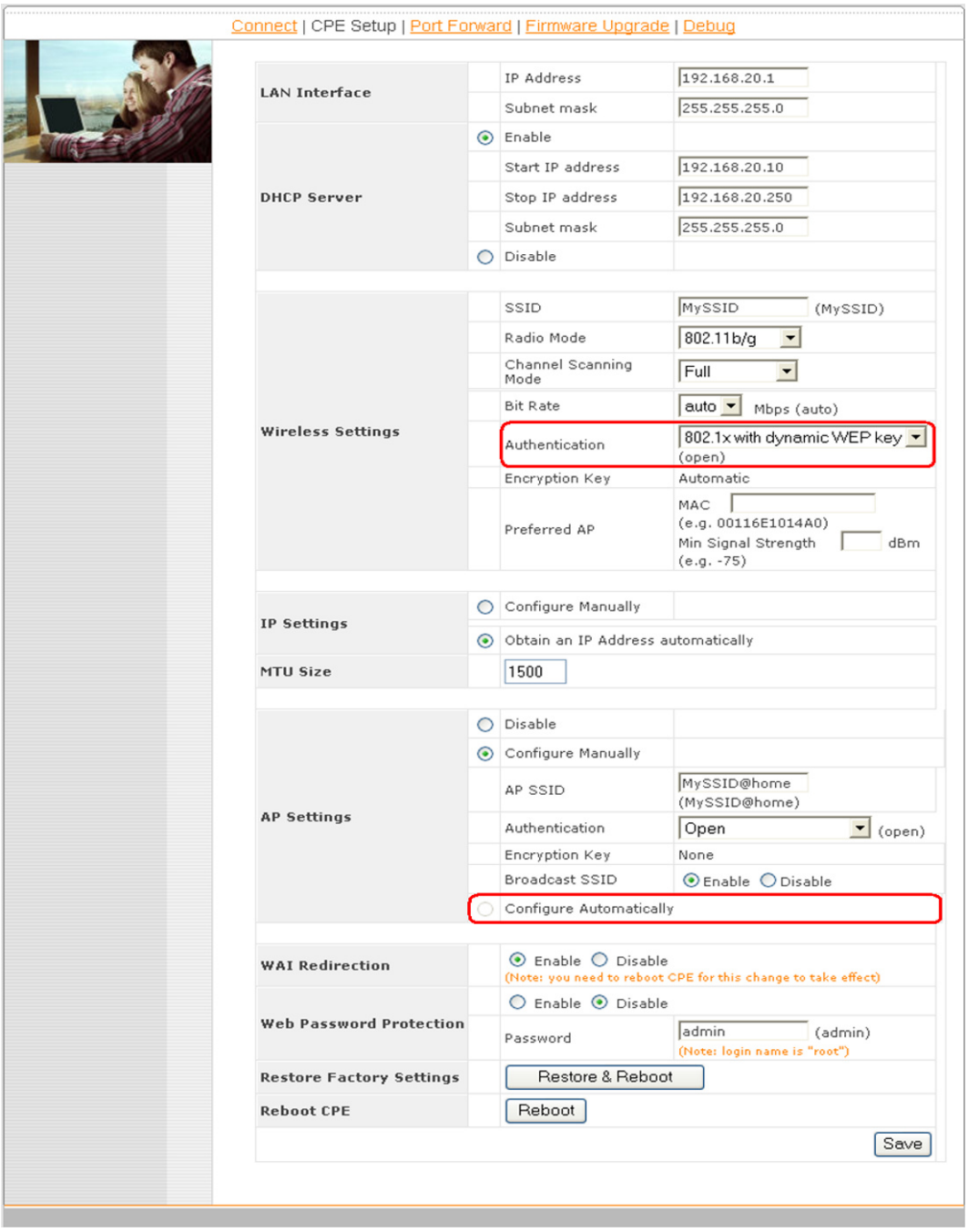
Auto. Access Point Configuration, as shown with the red marker box

With the Access Point Configuration set to ***Configure Automatically***, the ***SSID***, ***Authentication***, and ***Encryption Key*** values of the Integrated Home Wi-Fi Access Point will be configured to be the same as in the ***Wireless Settings*** section.

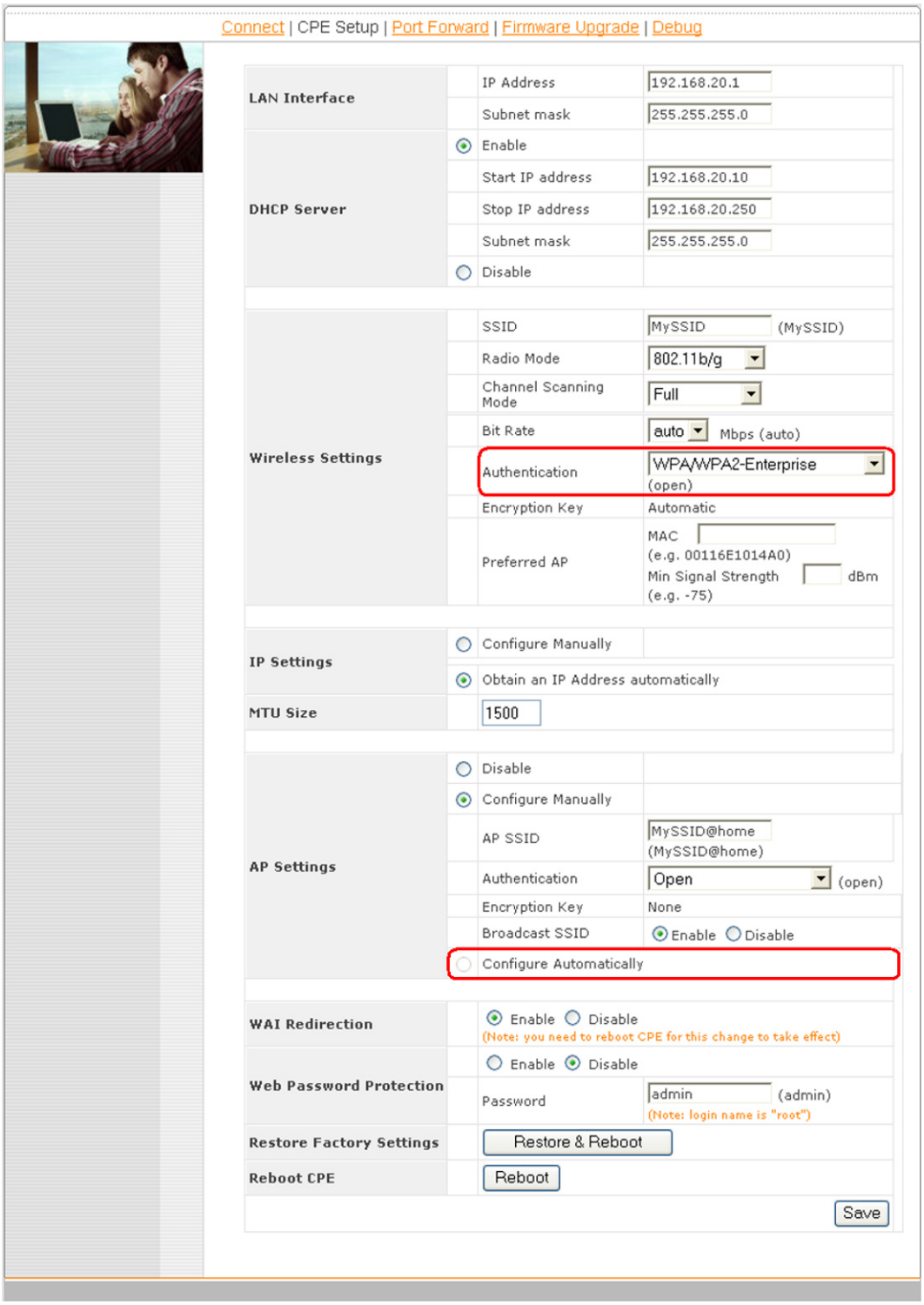
This configuration mode is effectively equivalent to directly connecting 802.1b/g devices on the customers' premises with Citywide Wi-Fi.

Important Note:

In the ***Wireless Settings*** section, if ***Authentication*** is set to either ***802.1x with dynamic WEP key*** or ***WPA/WPA2-Enterprise***, then the ***Configure Automatically*** option of the Access Point Configuration becomes unavailable, because the Integrated Home Wi-Fi Access Point functionality currently does not support authentication via the 802.1x with dynamic WEP key and WPA/WPA2-Enterprise methods.



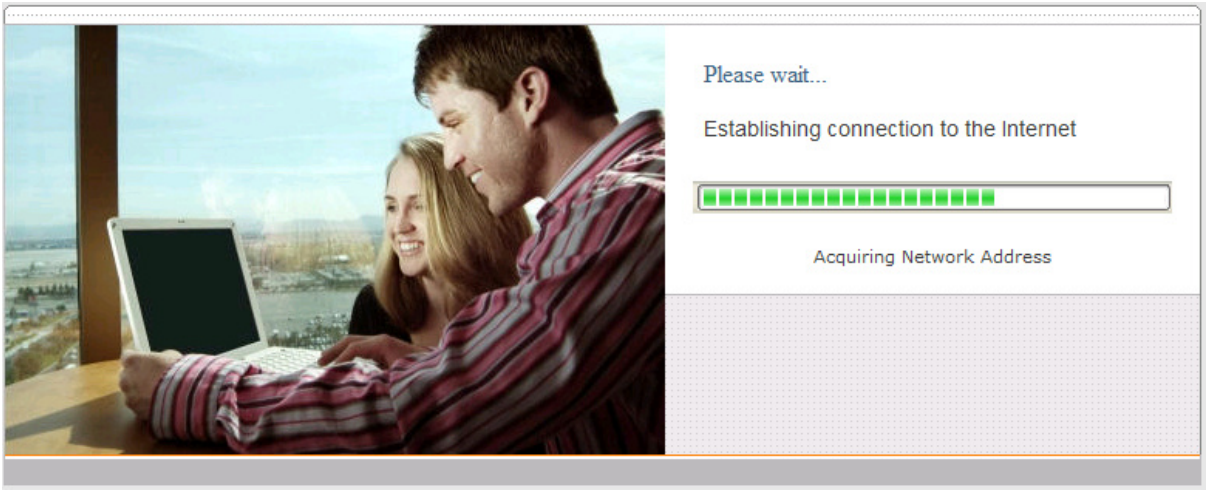
Automatic Access Point Configuration is unavailable with 802.1 with Dynamic WEP Key Authentication



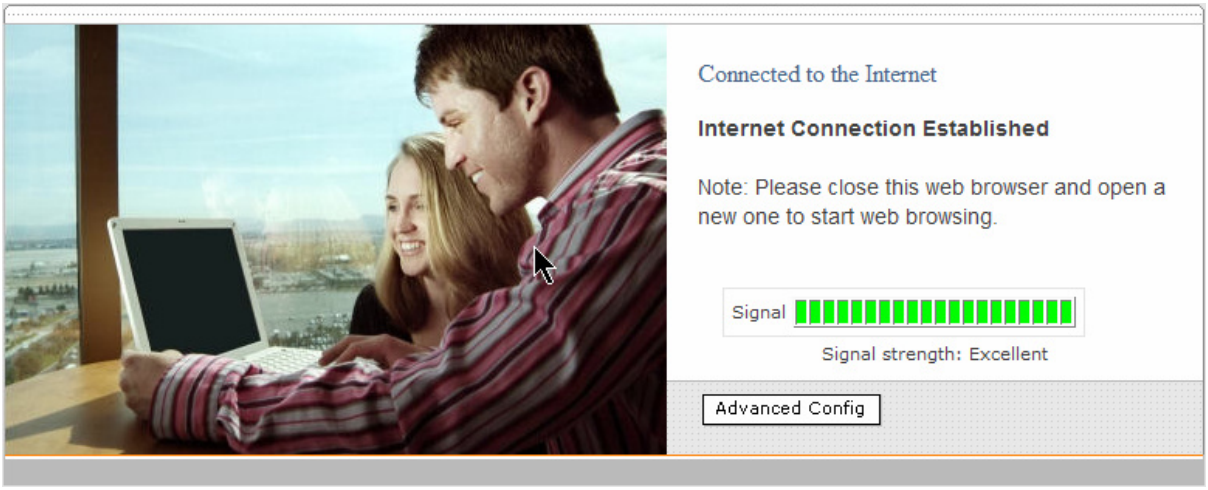
Automatic Access Point Configuration is unavailable with WPA/WPA2-Enterprise Authentication

4.4 Test the Setup

To test to setup, you can now go to the PePWave Surf's Main page, enter the user name and password. The realm (the text box next to the "@" sign) value can be left empty. Then click the Connect button.



After connected, you should see:



4.5 Firmware Upgrade

The PePWave Surf is able to check whether a newer firmware (the software running on the PePWave Surf) is available. This can be done in the Firmware Upgrade section.

However, it is recommended that you do not update the firmware unless specifically instructed by your ISP to do so. When a firmware upgrade is needed, your ISP will either give you instructions or upgrade the firmware remotely.

4.6 Restore to Default Settings

There are two ways to restore the PePWave Surf to default settings.

If you are able to access the web admin interface, go to the "CPE Setup" page, and click the "Restore and Reboot" button.

Otherwise, you can also power up the unit and wait for about 1 min. Then press the Reset button at the rear side of the unit using a pin and then hold it for 5 seconds. The unit will restore the settings to factory default and reboot.

SUPPORT

Email: support@pepwave.com

SALES

Email: sales@pepwave.com

BUSINESS DEVELOPMENT AND PARTNERS

Email: partners@pepwave.com

CORPORATE ADDRESS & PHONE

www.pepwave.com

US Address:
PePWave
800 West El Camino Real
Mountain View
CA 94040
United States

Tel: +1-650-331-0641
Fax: +1-866-625-4664

Hong Kong Address:
PePWave
17/F, Park Building
476 Castle Peak Road
Cheung Sha Wan
Hong Kong

Tel: +852-2786-9228
Fax: +852-3007-0588

http://www.pepwave.com

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RF exposure Compliance

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only the supplied antenna.

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Notes:

The manufacture is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.