Tenda®

V1.0

User Guide

www.tenda.cn

W54A 54M Wireless AP

Copyright Statement

All the photos and product specifications mentioned in this guide are for references only. As the upgrade of software and hardware, there will be changes. And if there are changes, Tenda is not responsible for informing in advance. If you want to know more about our product information, please visit our website at www.tenda.cn.

Contents

Chapter 1 Introdution

W54A is fully compliant with IEEE802.11g/b standards. It can help you extend from the wired network to the wireless network, free from the cabling troubles. It is the best choice for SOHO and small enterprise users. W54A provides five work modes: AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Bridge and Client. It also supports 64/128-bit WEP, WPA, TKIP, AES, WPA2, WPA&WPA2 encryptions and security mechanism. The MAC address filter can protect your network against any malicious intrusion. Moreover, the Web management utility can benefit you to manage the device easily.

1.1 Product Features

- Supports IEEE 802.11g, IEEE 802.11b standards
- Supports five connection modes: AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Bridge and Client
- Provides up to 54M transmission rate and 54/48/36 /24/18/12/9/6M or 11/5.5/2/1M Auto-Negotiation rate selection
- Supports one 10/100M Auto-Negotiation Ethernet port
- Supports 150 meters indoors and 400 meters outdoors (depends on the environments around)

- Supports Web management utility and easy Setup Wizard
- Supports 64/128-bit WEP data encryption
- Supports WPA, TKIP, AES, WPA2, WPA&WPA2 encryptions and security mechanism
- Supports IEEE802.11b/IEEE802.11g Auto-negotiation and manual configuration modes
- Supports Auto MDI/MDIX
- Supports Firefox1.0，IE5.5 or above
- Supports authorization access over thirty-two MAC addresses
- Supports auto wireless channel selection
- Provides detachable antenna

1.2 Package contents

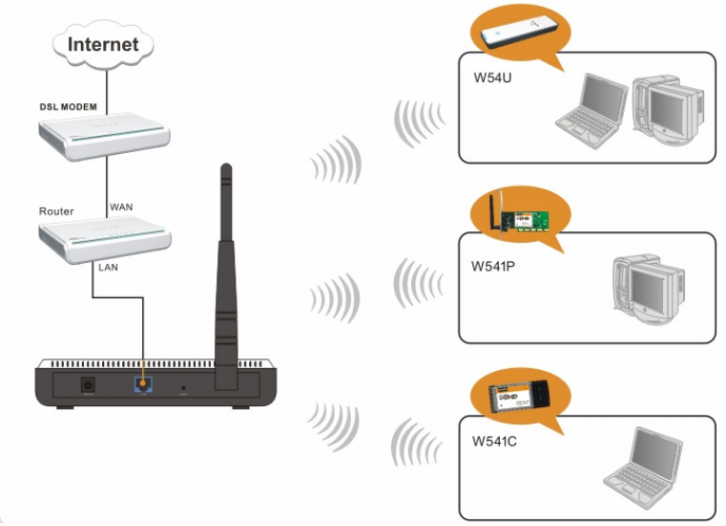
- One W54A Wireless AP
- One Power Adapter
- One Quick Installation Guide
- One CD-ROM

Chapter 2 Hardware Installation

This chapter explains how to connect the Access Point (take the AP mode installation as example, other installation modes please refer to the Quick Installation Guide). The detailed processes are shown as below:

1. Connect one end of the network cable to your Ethernet broadband router, switch or PC, and the other end to the W54A's LAN port.

2. Connect the power adapter to the AP's Power port. Then plug the power adapter into an electrical outlet. The LEDs on the front panel will light up as soon as the AP's powers on.
   Then, connect wireless adapter to the AP via wireless signal. Please refer to the topology below:



The topology plan of AP mode connection

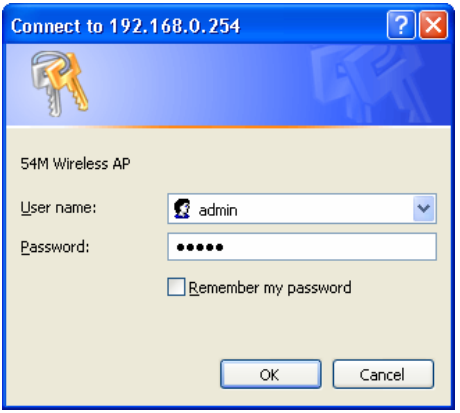
Chapter 3 Configuration

Now that you've connected the AP to your wired network, you are ready to begin setting it up. This chapter will take you through all the steps necessary to configure your AP.

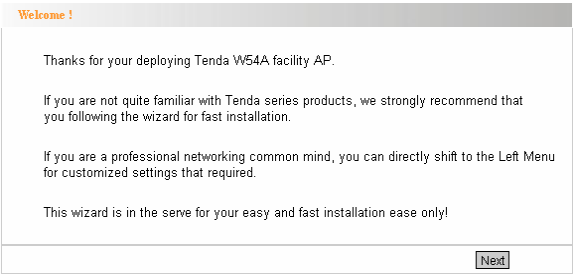
3.1 Log in

Launch Internet Explorer or Netscape Navigator. In the address bar, enter the AP's default IP address, 192.168.0.254. Press Enter key and the login screen will appear. Before doing this, you need set 192.168.0.x(x ranges 1-253) as your PC's IP address, and 255.255.255.0 as your subnet mask. (Please refer to the Appendix II for the detail of TCP/IP setting)

Enter **admin** in both the user name and password field. When this is your first time to open the Web-based management interface, you can set a new password from the *System Tool – Change password* tab.



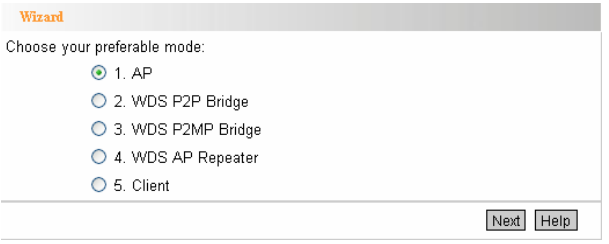
Click **Ok**; the welcome screen will appear;



Click **Next** and Wizard screen will appear. On the screen, there are five different operating modes including W54A—AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Repeater and the client. The specific setting for each mode will be showed below.

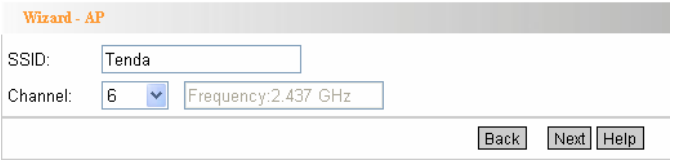
3.2 Wizard

If the wizard page hasn't appeared, you can also click the *wizard* tab on the left to active.



For different requirements, you can select one of the suitable operating modes. Here, we'll take AP mode as example to introduce the settings method.

Select AP mode and click **Next**.



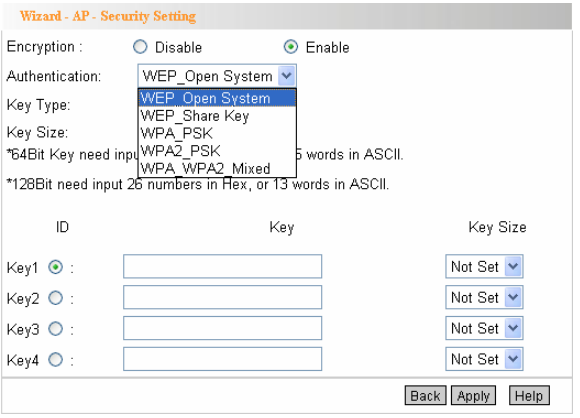
This page will require you to enter the SSID, Channel settings for your wireless network.

SSID: The name of your wireless network. The default value is "Tenda".

Channel: Select the operating frequency for your wireless network.

Click the **Next** button to continue or the **Back** button to return to

the previous screen.



Then you'll see the security setting screen. You can select the different level of security:

Authentication: WEP_Open System/Share Key, WPA, WPA2, and WPA_WPA2_Mixed

Key Type: Select ASCII or Hex format.

Key Size: 64-bit or 128-bit (Note: If you select 64-bit, please enter 10 Hexadecimal characters or 5 ASCII Characters for the key content. For 128 -bit, you should enter 26 Hexadecimal characters or 13 ASCII Characters).

Key Choice: when using the WEP encryption mode, you could save up to 4 keys.

According to W54A modes, wireless encryption settings supported are shown below.

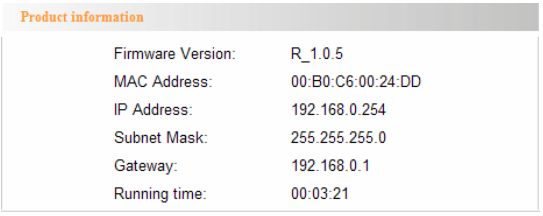
Table 1: Wireless Security

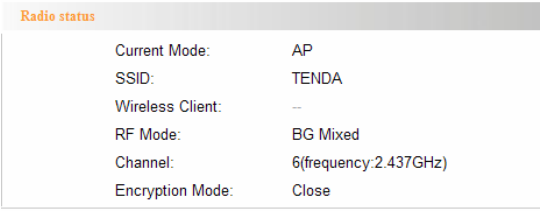
Mode	WEP	WPA	WPA2	WPA_WPA2_Mixed
AP	Yes	Yes	Yes	Yes
Repeater	Yes	NO	NO	NO
P2P	Yes	NO	NO	NO
P2MP	Yes	NO	NO	NO
Client	Yes	Yes	Yes	Yes

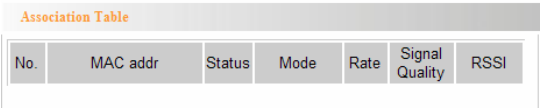
Note: After clicking **Apply** to save your settings, you have to reboot the device (From *System Tools—Reboot*) to let your settings take effect.

3.3 Status

This page shows the AP's product information and working status.







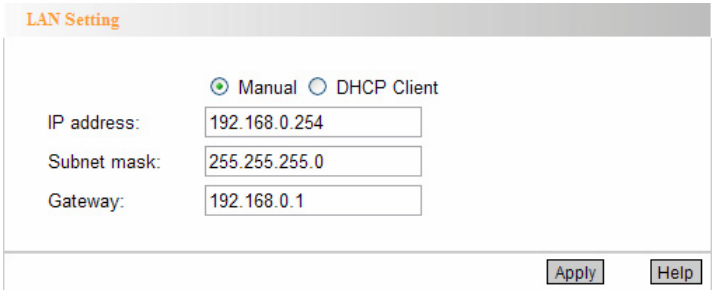
Product information: Display current firmware version, MAC Address, LAN IP Address, subnet mask, Gateway etc.

Radio Status: Current mode, SSID, RF mode, Channel and Encryption mode etc.

Association Table: Display the clients' information of connecting with the AP including the MAC address, status, mode, rate, signal quality and RSSI. Click **Refresh** button to update the linking info.

3.4 LAN Setting

From LAN Setting Screen, we can set the LAN port's network parameters



Manual: if you want to assign a static or fixed IP address to the AP, then select this, and enter the specified IP address (The default IP is 192.168.0.254), Subnet mask, and Gateway

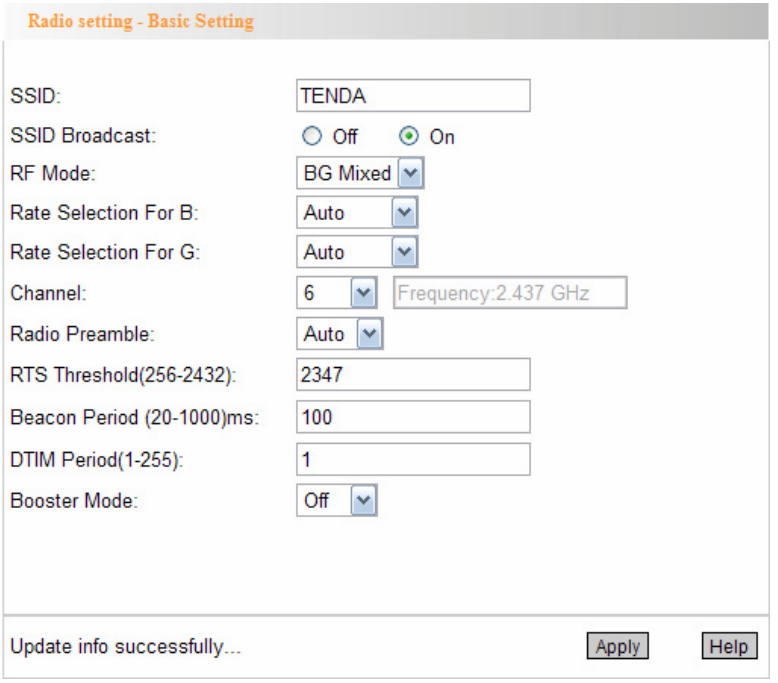
DHCP Client: if your network router will automatically assign an IP address to the AP, then you can select this.

Note: If you change the IP address here, your login IP address to the Web-based management interface will vary corresponding.

Chapter 4 Radio Setting

4.1 Basic Setting

Click *Radio Setting—Basic Setting* tab. This screen requires you to set the basic parameters for your wireless network.



SSID: Enter the name of your wireless network.

SSID Broadcast: Enable/disable the SSID broadcast

AP Mode: Selects 802.11g, 802.11b, BG Mixed

Rate selection for B: Selects the transmission rate of B mode, auto or a fixed rate,11/5.5/2/1Mbps

Rate selection for G: Selects the transmission rate of G mode, auto or a fixed rate, 54/48/36/24/18/12/11/9/ 6/5.5/2/1Mbps

Channel: Select the operating channel for your wireless network, auto or fixed, range from1-13.

Radio Preamble: Selects short, long, or Auto.

RTS: RTS threshold. This value should remain its default setting of 2347(Bytes).

Beacon: This value indicates the frequency interval of the beacon (in milliseconds)

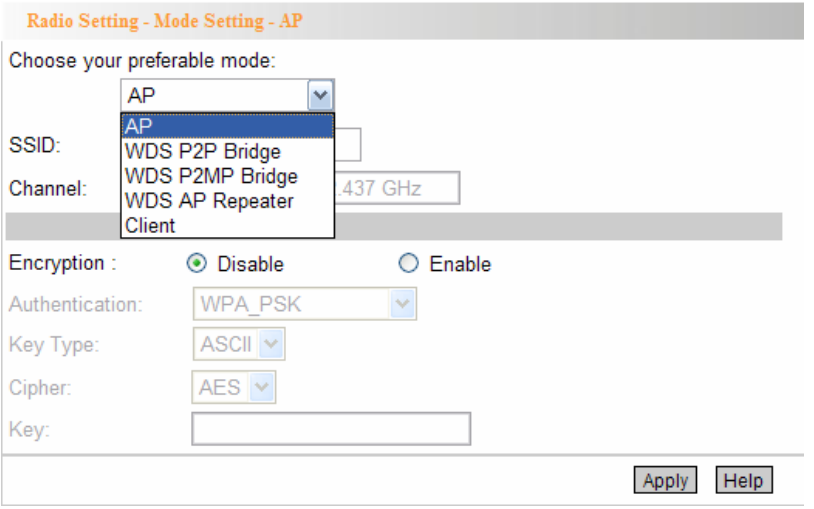
DTIM: This value indicates how often the AP sends out a DTIM.

Booster mode: When used with Marvell client cards, Boost Mode enhances throughput an additional 30% at 54Mbps.

Click **Apply** to save your settings, and **Help** for more information.

4.2 Mode Setting

The first step in using the W54A is selecting the operating mode. The default operating mode is AP mode. To select a mode, click the *Mode Setting* tab. Select your preferable mode from the drop-down menu.



Here, we can see the W54A supports 5 operating modes, which will be introduced respectively.

4.2.1 AP mode

The AP mode is the basic mode of the device. When the system is reset to the default factory settings, the operating mode reverts to AP mode. In this mode, the AP will act as a central hub for different wireless LAN clients. For example, when traveling to a hotel that has high-speed internet access, you can connect to the internet through the AP which is connected to an Ethernet cable in the room (see Figure 1)

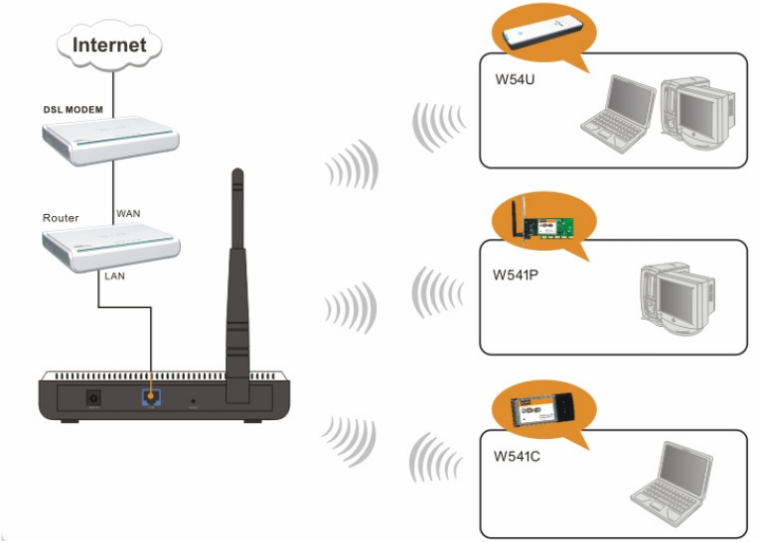
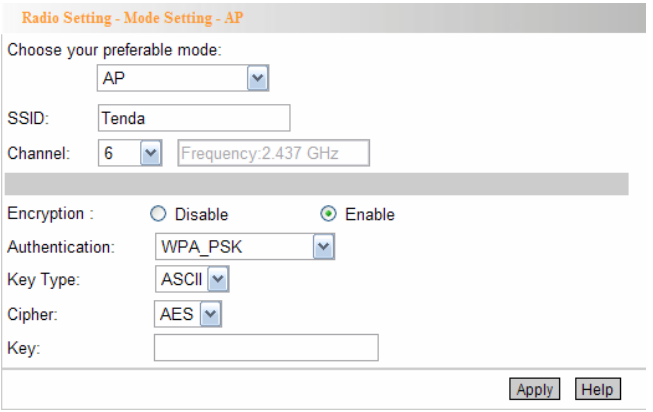


Figure 1

Click *Mode Setting* tab and select AP, the following screen will appear.



- **SSID**: The name of your wireless network.
- **Channel**: The operating channel
- **Encryption**: Select disable or WEP, WPA, WPA2, WPA_WPA2 Mixed mode for security.

Click **Apply** to save your settings.

4.2.2 WDS P2P Bridge

In this mode, 2 APs in two remote locations connect with each other to provide a wireless bridge between 2 remote LANs, as shown in Figure 2. The two W54A devices operating in P2P mode do not allow client associations. It is mostly used by enterprise to connect 2 remote office's network together.

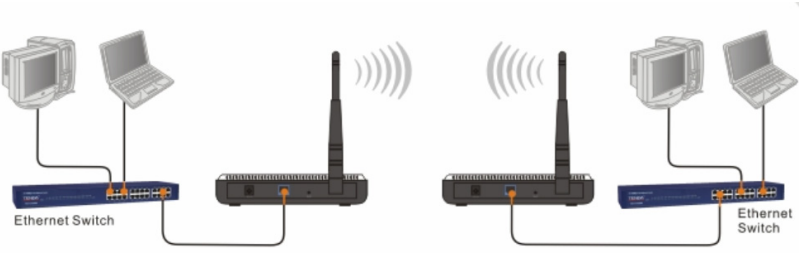
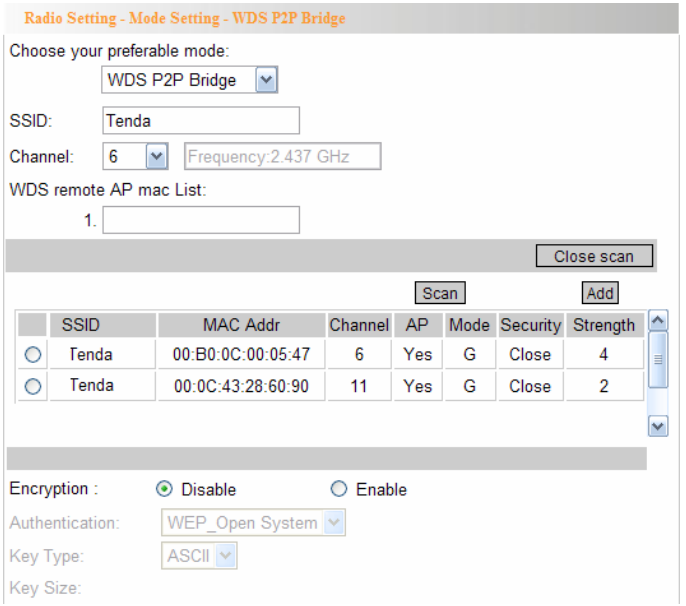


Figure 2

Click *Mode Setting* tab and select WDS P2P Bridge, the following screen will appear.



- **SSID**: The name of your wireless network.
- **Channel:** The operating channel
- **WDS remote AP MAC List:** Enter MAC addresses whose remote device need to connect. (Also you can obtain MAC address for copying or entering manually by the scan.)
- **Encryption:** support only WEP mode for security.

Click **Apply** to save your settings.

4.2.3 WDS P2MP Bridge

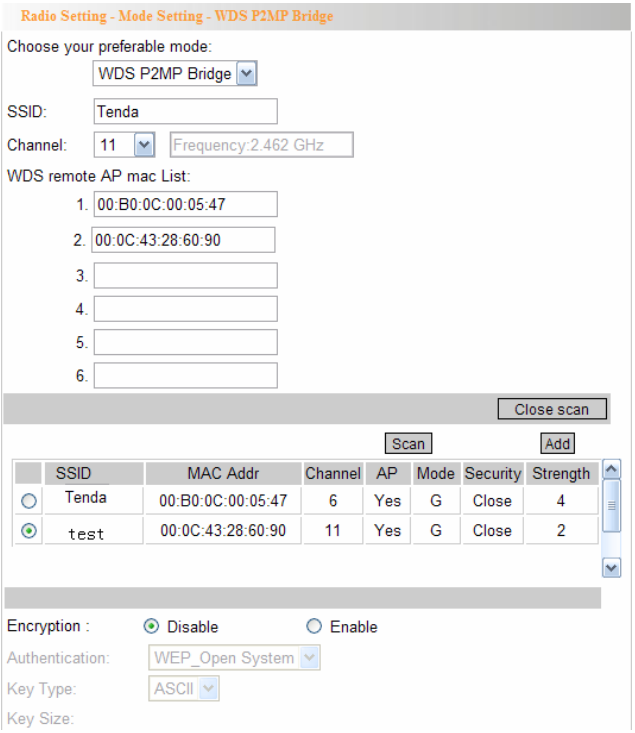
A W54A device operating in Point-to-Multipoint (P2MP) bridge mode wirelessly connects two or more wired networks, as shown in Figure 3.

The root W54A device (LAN1) operates in P2MP mode, while the other W54A devices (LAN2, LAN3) must operate in P2P mode.

When operating in P2MP bridge, the W54A device does not allow client associations.

Figure 3

Click *Mode Setting* tab and select WDS P2MP bridge, the following screen will appear.



- **SSID:** The name of your wireless network.
- **Channel:** The operating channel
- **WDS remote AP List:** MAC addresses of the P2P Bridge that are connected to this P2MP Bridge. Up to six MAC addresses can be entered. (Also you can obtain MAC address for copying

or entering manually by the scan.)

- **Encryption**: support only WEP mode for security.

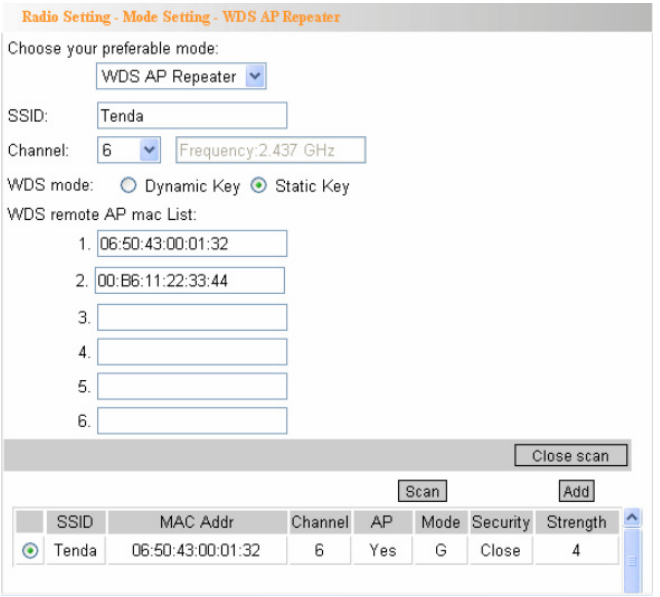
  Click **Apply** to save your settings.

4.2.4 WDS AP Repeater

A repeater is placed between an AP and a client to extend the distance between the two WLAN devices. Functioning as a WDS repeater, the W54A connects to both a client card as an AP and to another AP. In typical repeater applications, APs connecting to other APs equipped with WDS functionality must also support WDS. Figure 4 shows an example of a Repeater network with two W54A Repeaters connected to a W54A (AP mode), with each Repeater allowing wireless clients to associate.

Figure 4

Click *Mode Setting* tab and choose WDS AP Repeater, the following screen will appear.



- **SSID**: The name of your wireless network.
- **Channel**: The operating channel
- **WDS mode**: Dynamic key or Static key; At least one of the two associated repeater should be set as static key. If selecting dynamic key for one repeater, you don't have to fill the other repeater's MAC addresses at the MAC list field.
- **WDS remote AP MAC List**: MAC addresses of the repeaters that are connected to this repeater. Up to six MAC Addresses can be entered. (Also you can through the **Scan** function and **Add** the selected item to the list).
- **Encryption**: support only WEP mode for security.

Click **Apply** to save your settings.

4.2.5 Client mode

When Client mode is selected, the W54A associates with another AP within its range. The device behaves like a wireless network adapter.

Figure 5 shows the Client mode W54A as a wireless client in infrastructure mode. Connect the LAN port of the W54A with Ethernet interface of the wired network.

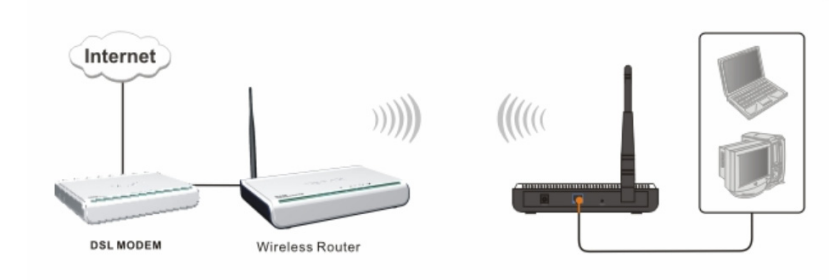
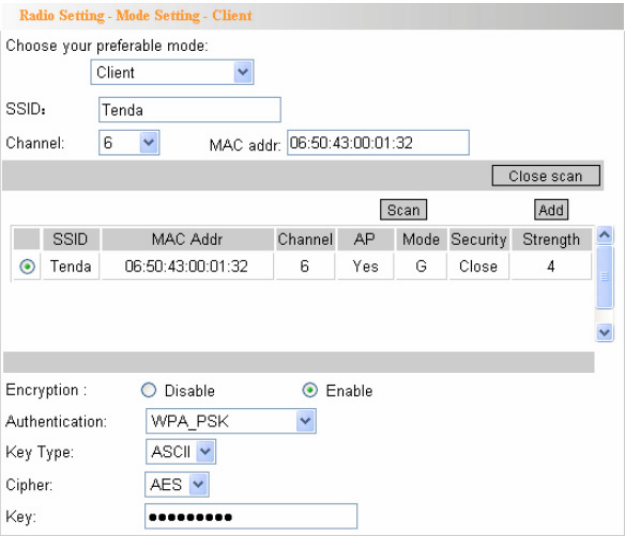


Figure 5

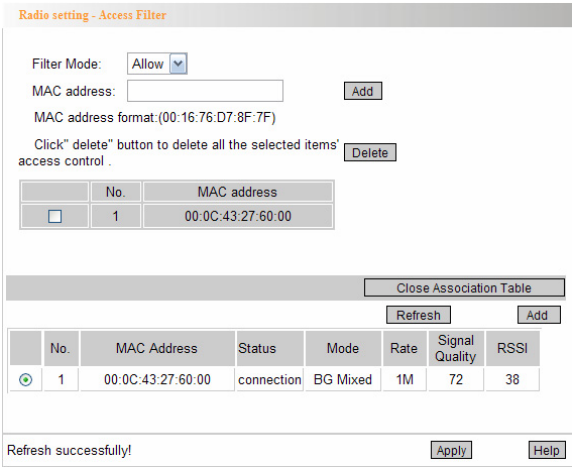
Click *Mode Setting* tab and choose Client, the following screen will appear.



- **SSID**: The wireless network's name you want to associate with.
- **Channel**: The operating channel of the wireless network.
- **MAC Addr**: The MAC address of the wireless network.
- **Scan**: you can through the scan function to display exit wireless network of the neighborhood, and click **Add** to establish connection with it.
- **Encryption**: Select disable or WEP, WPA, WPA2, WPA_WPA2 Mixed mode for security.

4.3 Access Filter

Click *Radio setting---Access Filter* tab, *the* follow screen will appear.



The Access filter page allows you to configure the AP to allow or block association with itself based on the MAC address of clients. Up to 32 MAC addresses can be added to the list.

Filter mode: you can select off to disable the filter function. Or Allow / Block client with the MAC address listed.

MAC address: The PCs MAC addresses to filter. Click **Add** to take it in. Or **Delete** to remove it from the list.

Open/Close Association Table: To view the current association information with the device**.** Click **Refresh** to update the association info, and **Add** to take the selected item into filter list.

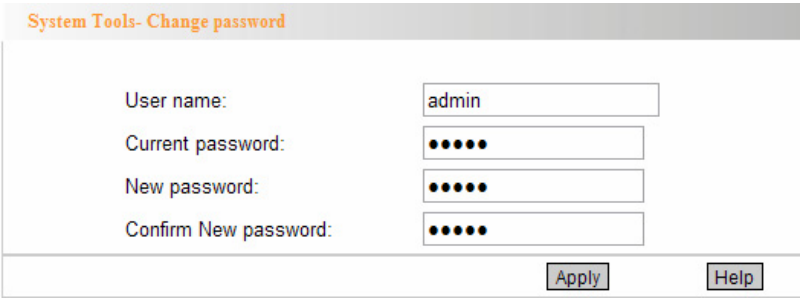
Click **Apply** to save your settings.

Chapter 5 System Tools

Click *System Tools* tab, there are 5 submenus-----*Change password, Firmware upgrade, Reboot, Restore factory* and *Restore/Backup Setting.*

5.1 Change Password

To change the password, enter the new password in the new password and Confirm New password fields. Click **Apply**.



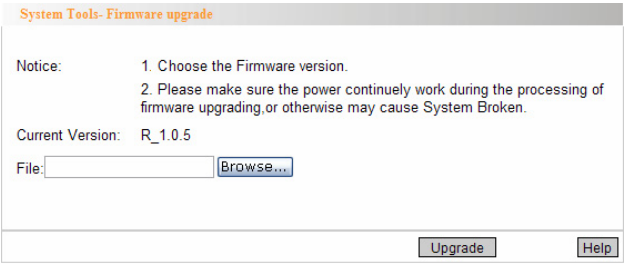
⚠**NOTE**: For security reason, it is strongly recommend that you change the default user name and password.

5.2 Firmware Upgrade

On this screen you can upgrade the AP's firmware. Do not upgrade the firmware unless you are experiencing problems with the AP or

the new firmware has the features you want to use. To upgrade the AP's firmware:

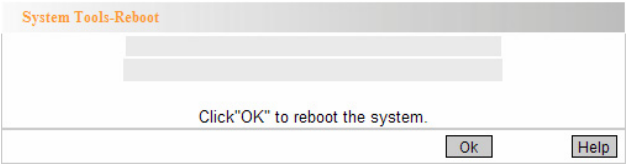
1. Download the firmware file from our website: www.tenda.cn.
2. Extract the firmware file on your computer.
3. On the Firmware Upgrade screen, enter the location directory of the firmware file in the field provided, or click the **Browse** button and find the file.
4. Click **Upgrade** button, and follow the on-screen instructions. You can click the **Help** button for more information.



⚠**NOTE**: During the firmware upgrade, please make sure the device is always powered on. Otherwise, power failure will result in a fatal damage to the device. After the process is completed, the device will reboot automatically. It will take about several minutes, please wait for a few seconds patiently.

5.3 Reboot

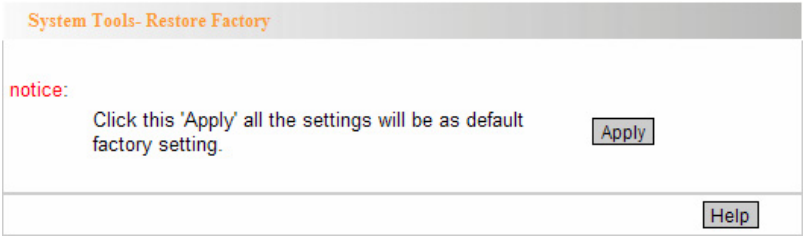
Reboot the AP to make the configured settings effective. Before rebooting is completed, the AP will disconnect automatically.



5.4 Restore Factory Default

That will erase all of your settings (including wireless security, current working mode, etc), and restore to the factory defaults.

- Working mode: AP mode
- Default user name: admin
- Default password: admin
- Default IP address: 192.168.0.254
- Default subnet mask: 255.255.255.0
- Default Gateway: 192.168.0.1

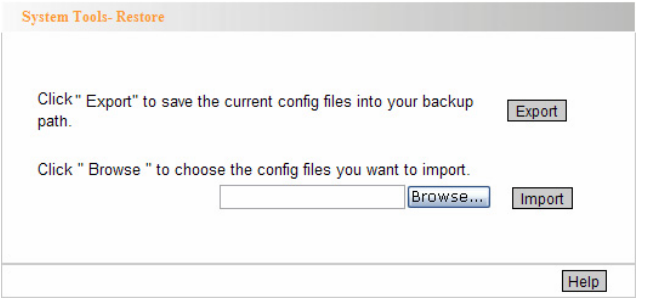


5.5 Restore/Backup Setting

On this page you can create a backup setting file or save the configured setting to the AP.

Export: To save a backup setting file on your computer, click the **Export** button and follow the on-screen instructions.

Import: To upload a setting file to the AP, click **Browse** to select the existing setting file, then click **Import** button and follow the on-screen instructions. Don't forget reboot the device to take effect finally.

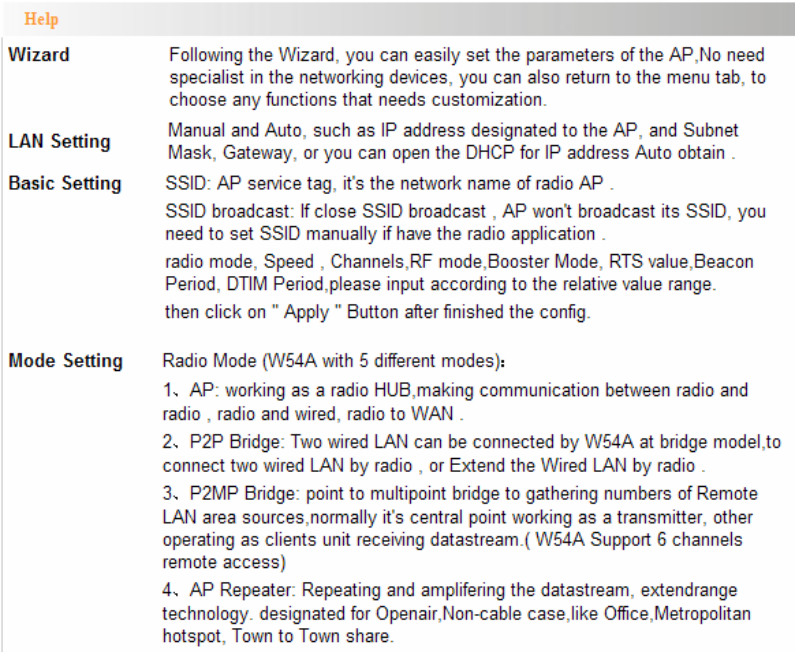


5.6 Exit

Click the **Exit** button to log out the web-based utility.

5.7 Help

Click the **Help** button to get more information about the AP's settings and applications.



Appendix I: Glossary

Access Point(AP): Any entity that has station functionality and provides access to the distribution services, via the wireless medium(WM) for associated stations.

Channel: An instance of medium use for the purpose of passing protocol data units (PDUs) that may be used simultaneously, in the same volume of space, with other instances of medium use(on other channels) by other instances of the same physical layer (PHY),with an acceptably low frame error ratio(FER) due to mutual interference.

SSID: Service Set identifier. An SSID is the network name shared by all devices in a wireless network. Your network's SSID should be unique to your network and identical for all devices within the network. It is case-sensitive and must not exceed 20 characters (use any of the characters on the keyboard).Make sure this setting is the same for all devices in your wireless network.

WEP: Wired Equivalent Privacy (WEP) is the method for secure wireless data transmission. WEP adds data encryption to every single packet transmitted in the

wireless network. The 40bit and 64bit encryption are the same because of out 64 bits, 40 bits are private. Conversely, 104 and 128 bit are the same. WEP uses a common KEY to encode the data. Therefore, all devices on a wireless network must use the same key and same type of encryption. There are 2 methods for entering the KEY; one is to enter a 16-bit HEX digit. Using this method, users must enter a 10-digit number (for 64-bit) or 26-digit number (for 128-bit) in the KEY field. Users must select the same key number for all devices. The other method is to enter a text and let the computer generate the WEP key for you. However, since each product use different method for key generation, it might not work for different products. Therefore, it is NOT recommend using.

WPA/WPA2: A security protocol for wireless networks that builds on the basic foundations of WEP. It secures wireless data transmission by using a key similar to WEP, but the added strength of WPA is that the key changes dynamically. The changing key makes it much more difficult for a hacker to learn the key and gain access to the network.WPA2 is the second generation of

WPA security and provides a stronger encryption mechanism through Advanced Encryption Standard (AES), which is a requirement for some government users.

Appendix II: TCP/IP Address Setting (Take Winxp as example)

Click the “Start—>Settings—>Control Panel” (Fig- 1):

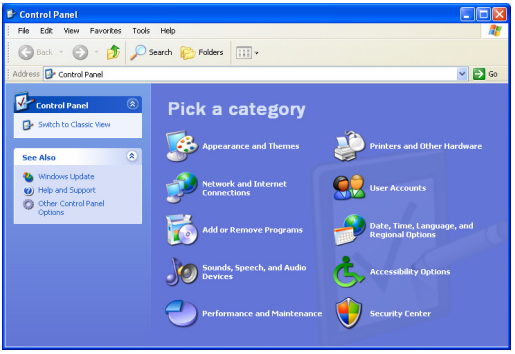


Fig-1

Click “Network and Internet Connections”, the windows as below will appear (Fig- 2):

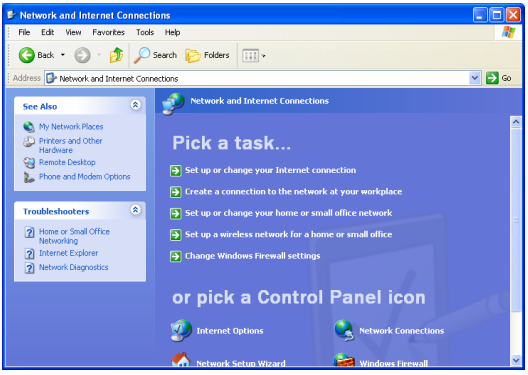


Fig- 2

Click the “Network Connections”, as Fig-3:

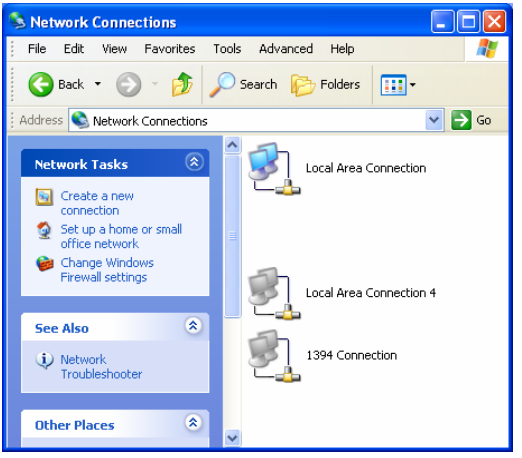


Fig-3

Choose “Local Area Connection”, right-click on the icon, choose the “Properties”, then the “Local Area Connection Properties”windows appear, choose the “Internet Protocol (TCP/IP)” in the “This connection uses the following items”, click the “Properties”.

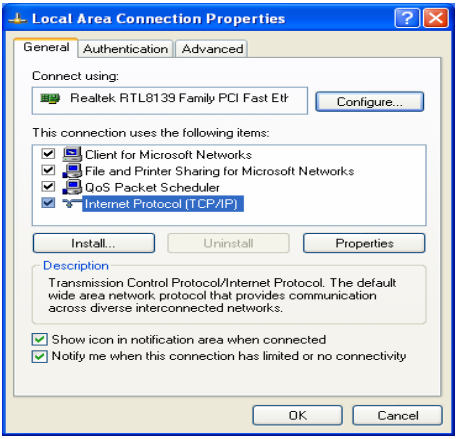


Fig- 4

Choose the “Use the following IP address”, enter the IP address as: 192.168.0.xxx. (xxx ranges 1~253), Subnet mask is: 255.255.255.0(As Showed in Fig- 5)

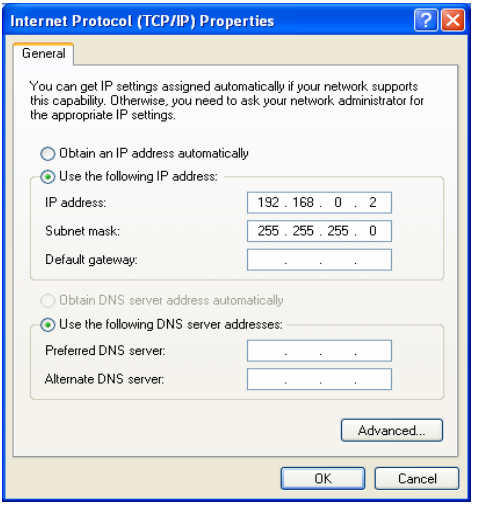


Fig- 5

Click “OK” to apply and return to the “Local Area Connection Properties” windows.

Continue click “OK” to exit the setting windows.