User Guide

WL-335G

IEEE 802.11g/b

WLAN AP, Client, Repeater, P2P, PMP

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1. Introduction

This document is the user manual for the SMC WTK-G product..

2. Quick Start

The default IP address of the WTK-G is 192.168.2.25. The login is "admin" and password is "smcadmin".

1. Connect the SMC WTK-G to a PC using an ethernet cable.
2. Plug in the 5V power supply.
3. Make sure the PC has a IP address on the 192.168.2.xxx subnet, such as 192.168.2.100.
4. Open your web browser and navigate to 192.168.2.25.
5. Type "admin" for the login field and "smcadmin" for the password.
6. The default out-of-box operating mode is Access Point (AP) mode. To switch to Repeater, P2P, PMP or Client mode, go to the Mode page and select the desired mode. Click Apply. The board will reboot into the desired mode.
7. After the board reboots, go to the Mode page and click Setup. Configure the applicable properties for that mode, such as security, SSID, channel, etc.
8. The SMC WTK-G should now be ready to use.

3. Operating Modes

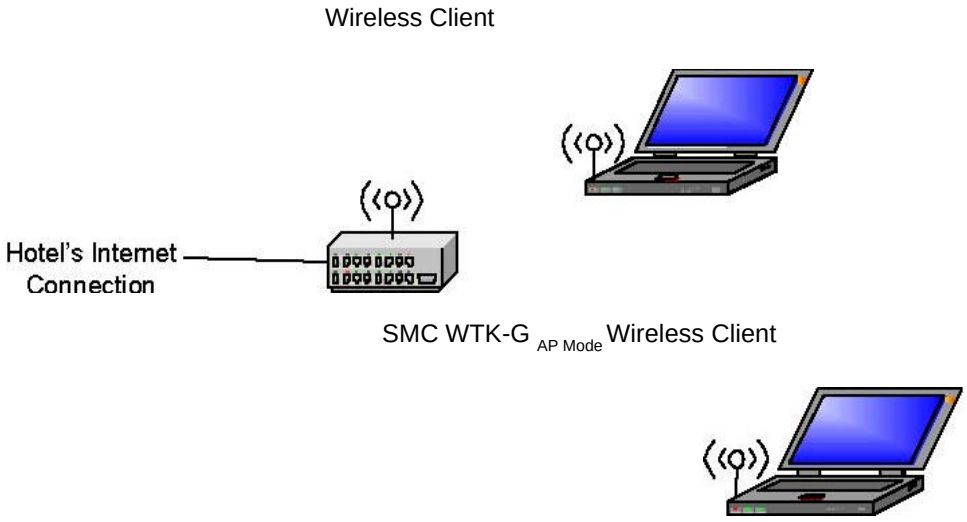
3.1 Introduction to Operating Modes

3.1.1 Traveler's AP Mode

The Access Point (AP) mode is by default the out-of-box operational mode. When the user resets the system to the default manufacturing settings, the operational mode also reverts to AP mode. In the AP mode, the system functions as a standard AP, where wireless clients connected to the AP can then connect to other wireless clients or to the wired network. For example, when traveling to a hotel that has high speed internet access, the user can connect to the Internet through the AP which is connected to an ethernet cable in the room.

Note that the SMC WTK-G AP acts only as a layer 2 bridge and does not act as a DHCP server. In other words, it does not supply dynamic IP addresses and instead relies on the network to supply them.

Figure 1: AP Mode



3.1.2 Repeater Mode

Repeater mode extends the range of a wireless network. Repeater nodes retransmit the signal of an AP or wireless router to effectively extend the range of that AP or wireless router. Wireless clients can associate with the repeater.

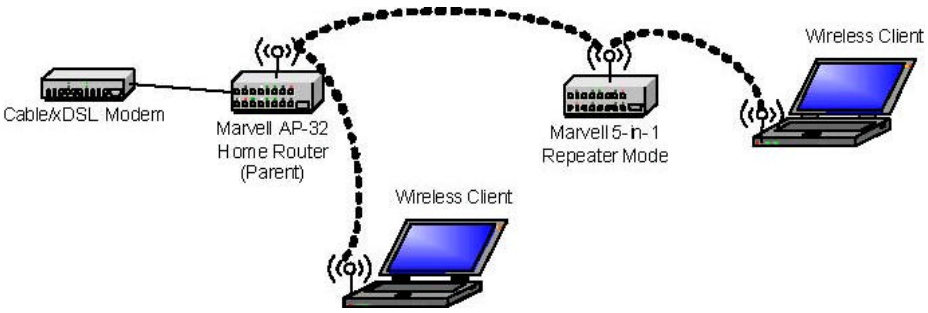
Figure2 shows the network with one repeater, and the repeater allowing wireless clients to associate.

To configure the SMC WTK-G as a Repeater, please ensure the following:

. • Enter the MAC address of the Parent AP or wireless router in the Remote AP MAC address field in the SMC WTK-G Repeater.

• Enter the MAC address of the SMC WTK-G (Repeater mode) in the Repeater MAC adddress field in the Parent AP or wireless router.

Figure 2: One Wireless Repeater Node



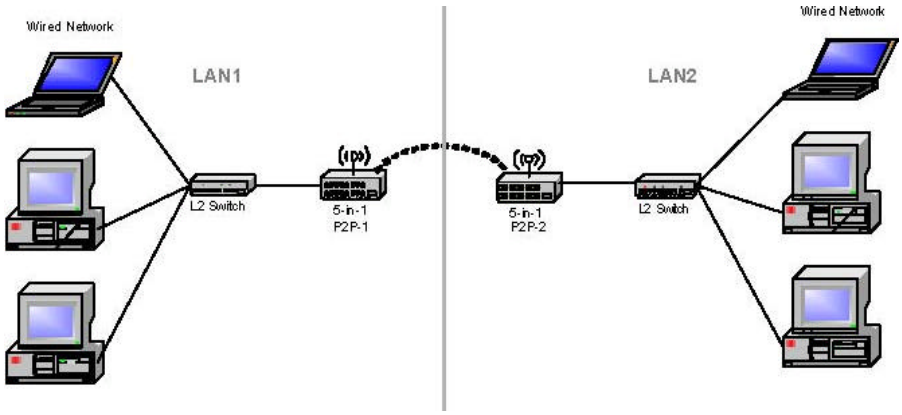
3.1.3 Point-to-Point (P2P) Mode

Two SMC WTK-G devices, each in Point-to-Point (P2P) mode, can establish a wireless connection between two wired networks, as shown in Figure3. The two SMC WTK-G devices operating in P2P mode do not allow client associations.

To configure the SMC WTK-G deivces to establish a P2P wireless bridge, please ensure the following:

- Enter the MAC address of SMC WTK-G P2P_2 device in the P2P MAC address field in the SMC WTK-G P2P_1 device.
- Enter the MAC address of SMC WTK-G P2P_1 device in the P2P MAC address field in the SMC WTK-G P2P_2 device.

Figure 3: P2P Wireless Bridge

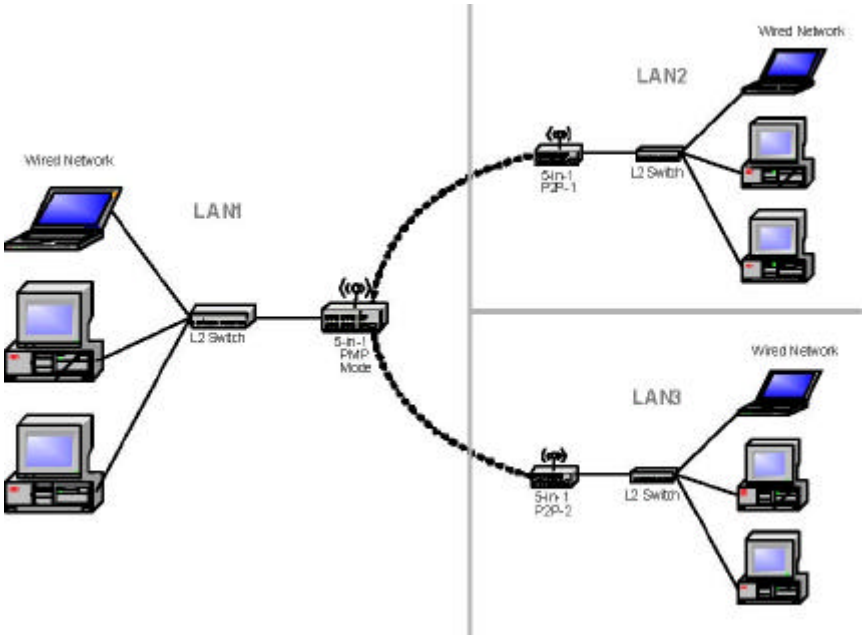


3.1.4 Point-to-Multipoint (PMP) Mode

A SMC WTK-G device operating in Point-to-Multipoint (PMP) mode can wirelessly connect two or more wired networks, as shown in Figure4. The root SMC WTK-G device (LAN 1) operates in PMP mode, and the other SMC WTK-G devices (LAN 2, LAN 3) must operate in P2P mode.

When operating in PMP mode, the SMC WTK-G device does not allow client associations. The user must enter the MAC addresses of each (up to six) SMC WTK-G P2P device into the PMP system's table of Remote AP addresses.

Figure 4: PMP Wireless Bridge



3.1.5 Client Mode

When set to Client mode, the SMC WTK-G device will associate to an AP within its range in infrastructure mode, as shown in Figure5or join with another SMC WTK-G device in Client mode in an ad-hoc network, as shown in Figure6. The Client behaves like a normal wireless client.

Figure 5: Client in Infrastructure Mode

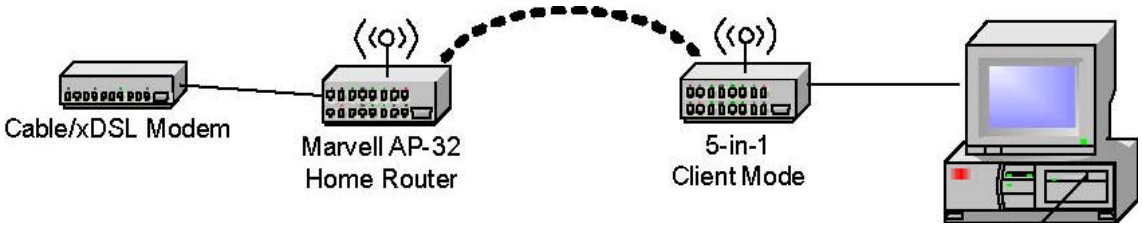
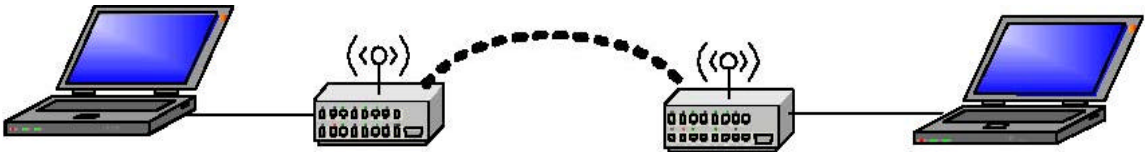


Figure 6: Client in Ad-Hoc Mode



SMC WTK-G SMC WTK-G Client Mode Client Mode

4. Wireless Security Support

The SMC WTK-G will support WEP encryption and WPA/PSK encryption as shown in Table1.

Table 1: Wireless Security

Mode	WEP	WPA/PSK	Comments
Access Point	Yes	Yes	In AP mode, the WTK-G acts like a regular AP. Supports WEP and WPA/PSK.
Repeater	Yes	No (for Repeater-AP link) Yes (for Repeater-Client link)	The link between the Repeater and wireless clients will support both WEP or WPA/PSK. However, the link between the Repeater and the AP will support only WEP in the initial release. Future releases will support WPA/PSK.
Point-to-Point (P2P)	Yes	No	The link between WTK-G devices in P2P and/or PMP mode support only WEP in the initial release. Future releases will support WPA/PSK.
Point-to-Multipoint (PMP)	Yes	No	The link between WTK-G devices in P2P and/or PMP mode will support only WEP in the initial release. Future releases will support WPA/PSK.
Client	Yes	Yes	In Client mode, the WTK-G acts like a regular wireless client, so it will support WEP and WPA/PSK when connecting with an AP in infrastructure mode or WEP when connecting to an Ad-Hoc network.

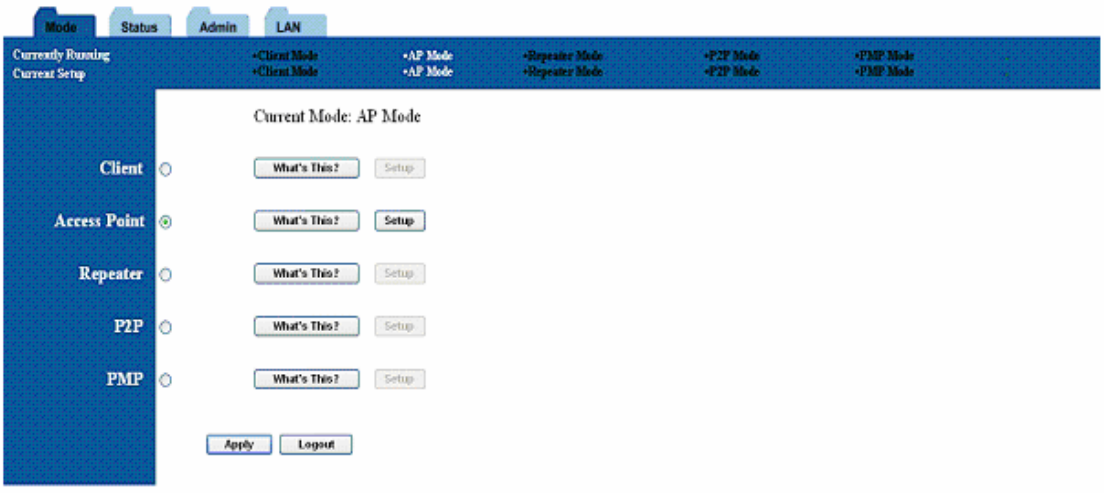
5. Mode Selection

The first step in using the SMC WTK-G is selecting the operating mode. The default operating mode is the AP mode.

To view the device's web page, go to 192.168.2.25 (default IP address of the device) in your web browser. The default username is "admin" and the password is "smcadmin."

To select a mode, click the Mode tab. Click the radio button next to the desired mode and click the Apply button. The device will reboot in the selected mode. After the board reboots, click the Setup button to begin configuring the device.

Figure 7:Mode Page



6. AP Setup

6.1 Basic Setup

To configure the AP, select AP from the Mode page and click Setup. The following table shows the basic setup options.

Figure 8:AP Setup Page

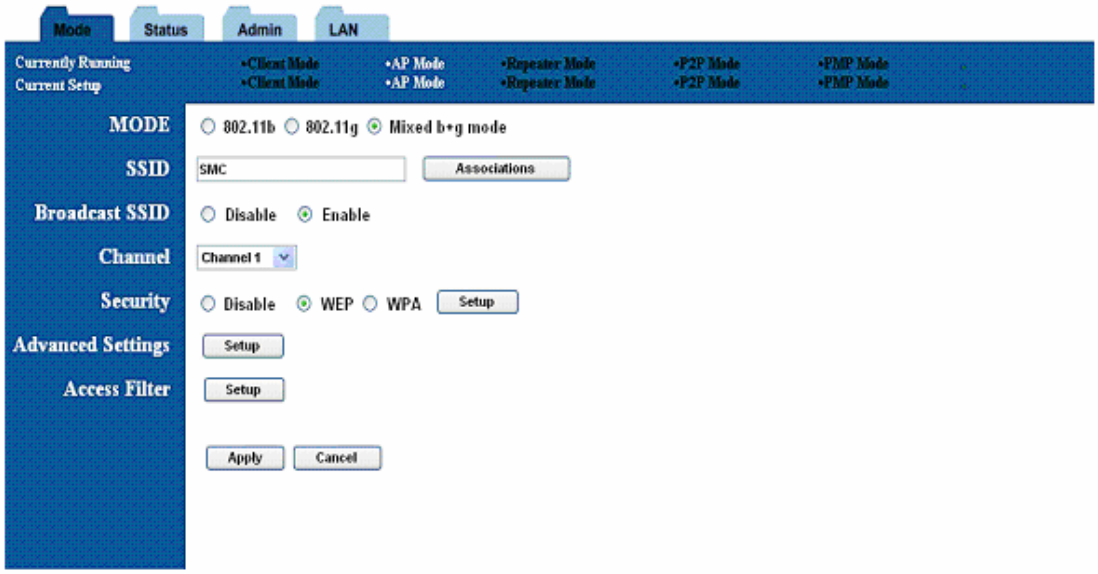


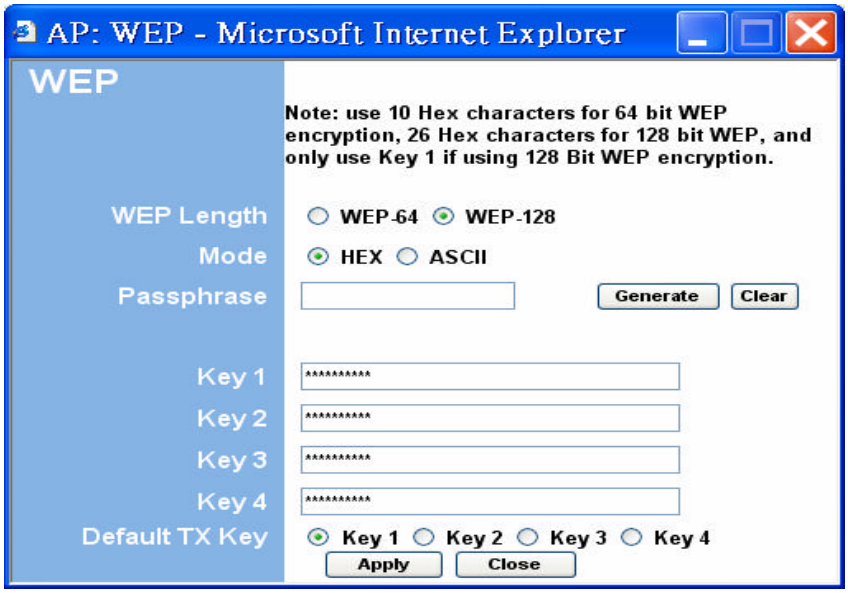
Table 2: AP Setup

Field	Description
Mode	Selects 802.11g/b mode: 802.11g only, 802.11b only, or Mixed
SSID	Wireless Network Name
Association	Wireless clients association table
SSID Broadcast	Enable/disable the SSID broadcast feature.
RF Channel	Selects the channel
Security	Selects the option to disable security or to use WEP or WPA security. If using WEP or WPA, click the Setup button to enter the key(s).
Advanced Settings	Click Setup to configure advanced settings.
Access Filter	Click Setup to configure the access filter

6.2 Security Setup

To enable security, select the desired security mode (WEP or WPA) from the AP setup page and click Setup to enter the keys.

Figure 9: WEP Configuratiom



The following tables describe the security setup options in more detail.

Table 3: WEP Setup

Field	Description
WEP Length	Selects the WEP key length
Mode	Selects the WEP key format, ASCII or Hex
Passphrase	Passphrase used to generate the WEP keys. Click the Generate button to generate the keys.
Key 1-4	WEP keys
Default Tx key	Selects the default WEP key (1-4)

Figure 10: WPA Configuration

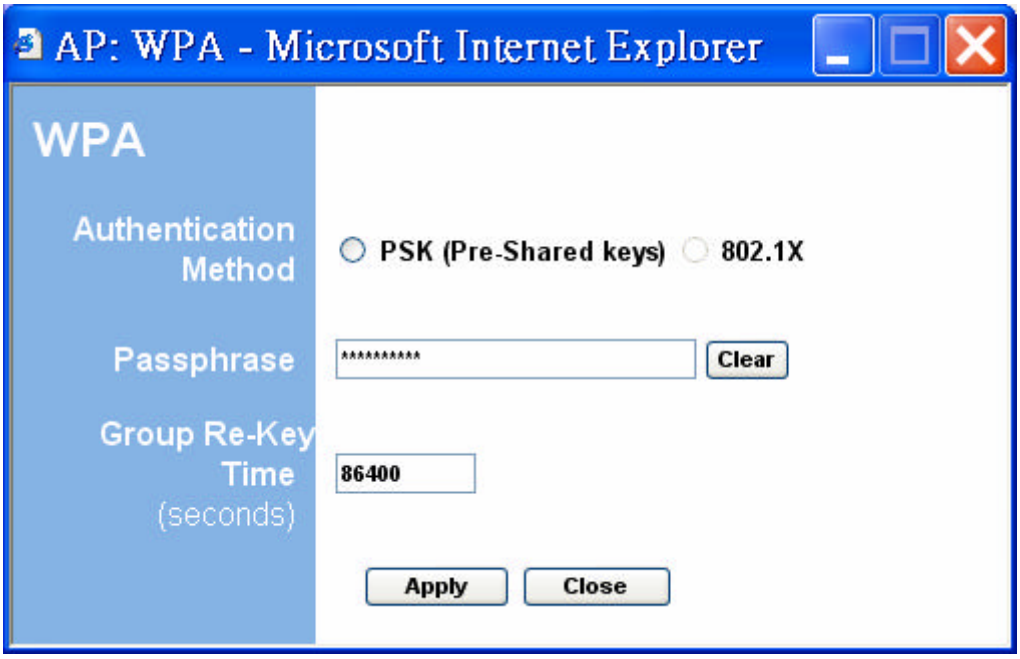


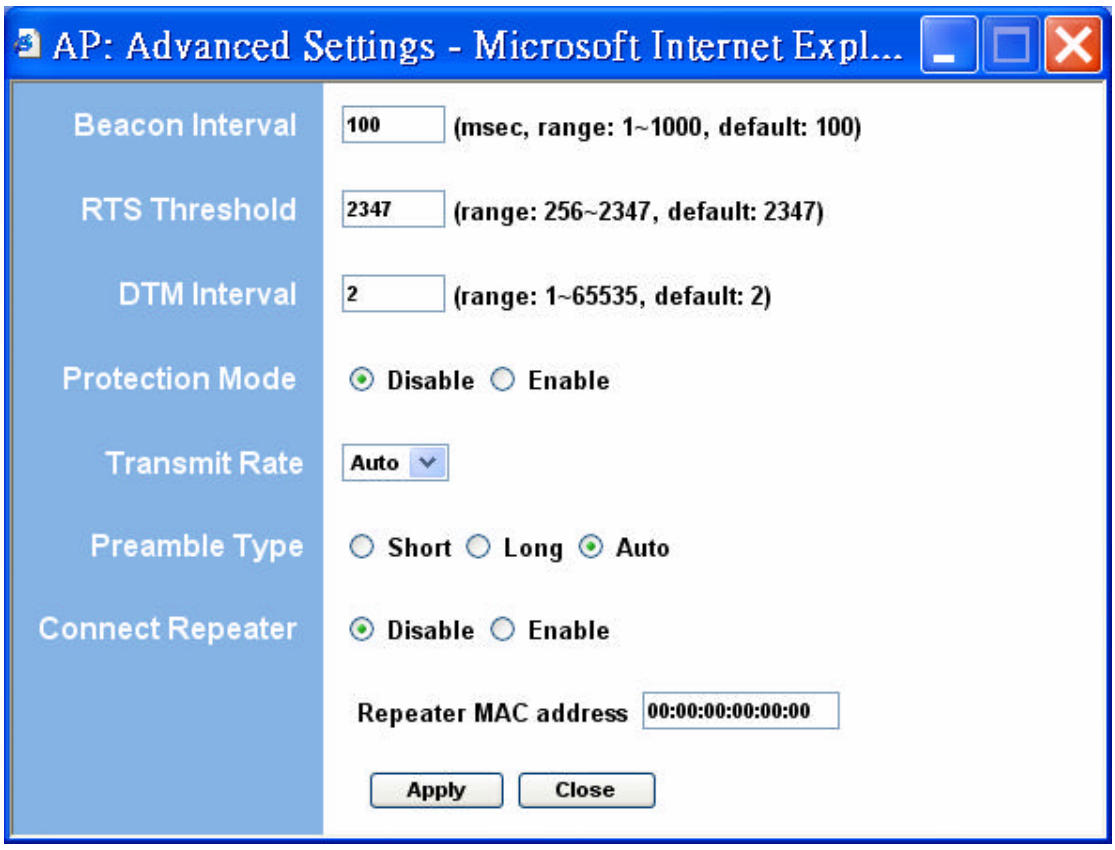
Table 4: WPA Setup

Field	Description
Authentication Method	Selects Pre-Shared Key (PSK) only.
Passphrase	WPA key
Group Re-Key Time	Group Re-Key interval (seconds)

6.3 Advanced Settings

The Advanced Settings page allows you to configure advanced Radio settings as well as extend the SMC WTK-G (AP mode) range by wirelessly linking it to a SMC WTK-G (Repeater mode).

Figure 11: Advanced Settings



The following table describes the setup options in detail.

Table 5: AP Advanced Settings

Field	Description
Beacon Interval	Beacon interval (in milliseconds)
RTS Threshold	RTS threshold (in bytes)
DTIM Interval	DTIM interval
Protection Mode	Allows user to force 802.11g protection (RTS/CTS) mode off.
Transmit Rate	Selects the transmit rate: Auto or a fixed rate
Preamble Type	Selects short preamble, long preamble, or Auto
Connect Repeater	Enables/Disables the use of a Repeater
Repeater MAC Address	MAC address of the Repeater, if used

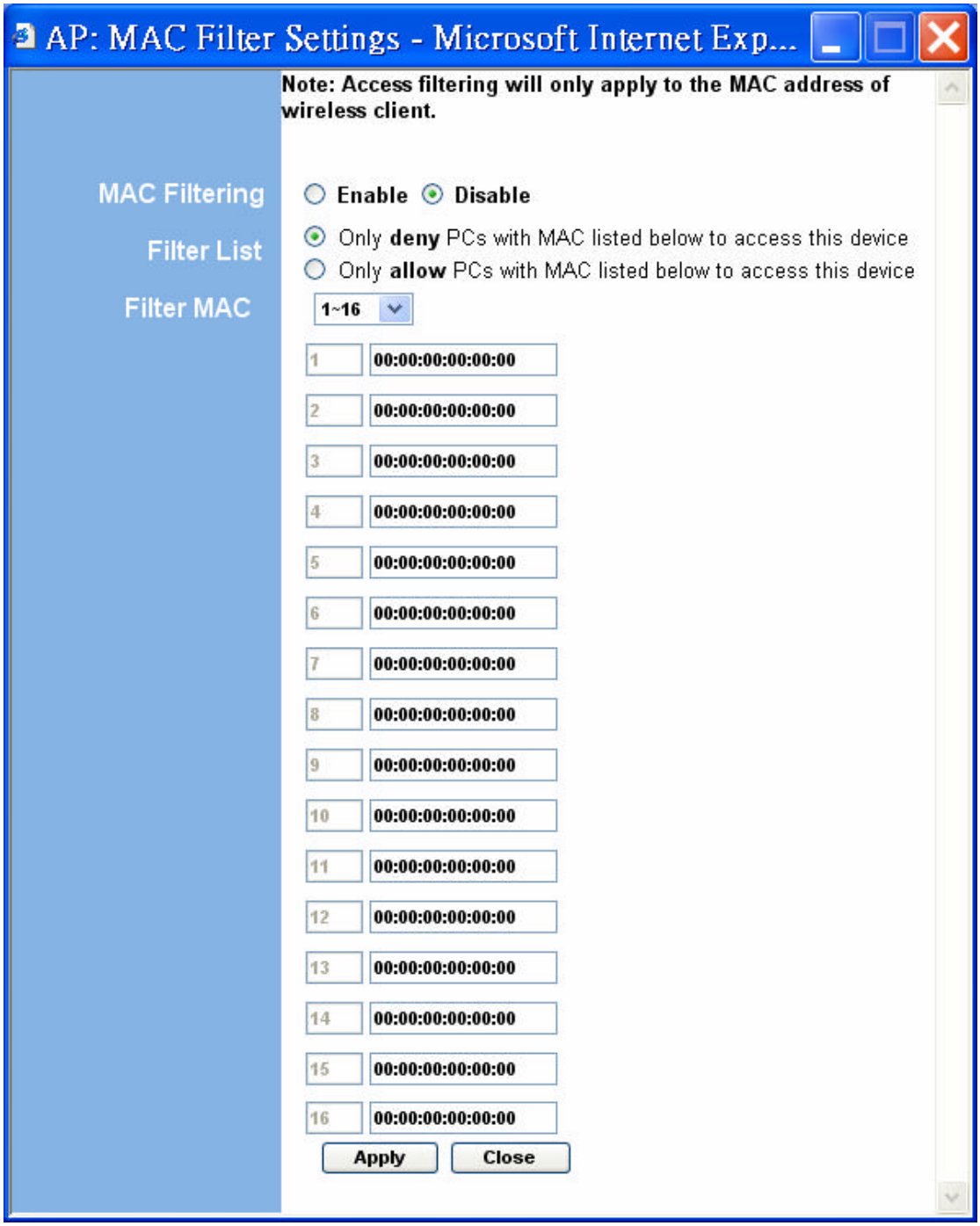
6.3.1 Adding a Repeater

If a Repeater is used along with the Access Point, go to the Advanced Settings page. Select Enable for the "Connect Repeater" field. Enter the MAC address of the Repeater in the "Repeater MAC address" field.

6.4 Access Filter

The Access Filter page allows you to configure the AP to allow or deny association to the AP based on the client's MAC address. Up to 32 MAC addresses can be added to the list.

Figure 12: Access Filter Settings



The following table describes the setup options in detail.

Table 6: AP Access Filter Settings

Field	Description
MAC filtering	Enables/Disables MAC filtering mode
Filter List	Provides the option to allow or deny clients with MAC addresses listed
Filter MAC	Up to 32 MAC addresses can be listed, but only 16 can be viewed/modified at a time. This pulldown menu selects which group of 16 to view/modify.
MAC addresses	List of MAC addresses to filter

7. Repeater Setup

7.1 Basic Setup

To configure the Repeater, select Repeater from the Mode page and click Setup. The following table shows the basic setup options

To set up the Repeater, you must enter the MAC address of the AP or AP/Router you want to connect to the Repeater.

Figure 13: Repeater Setup

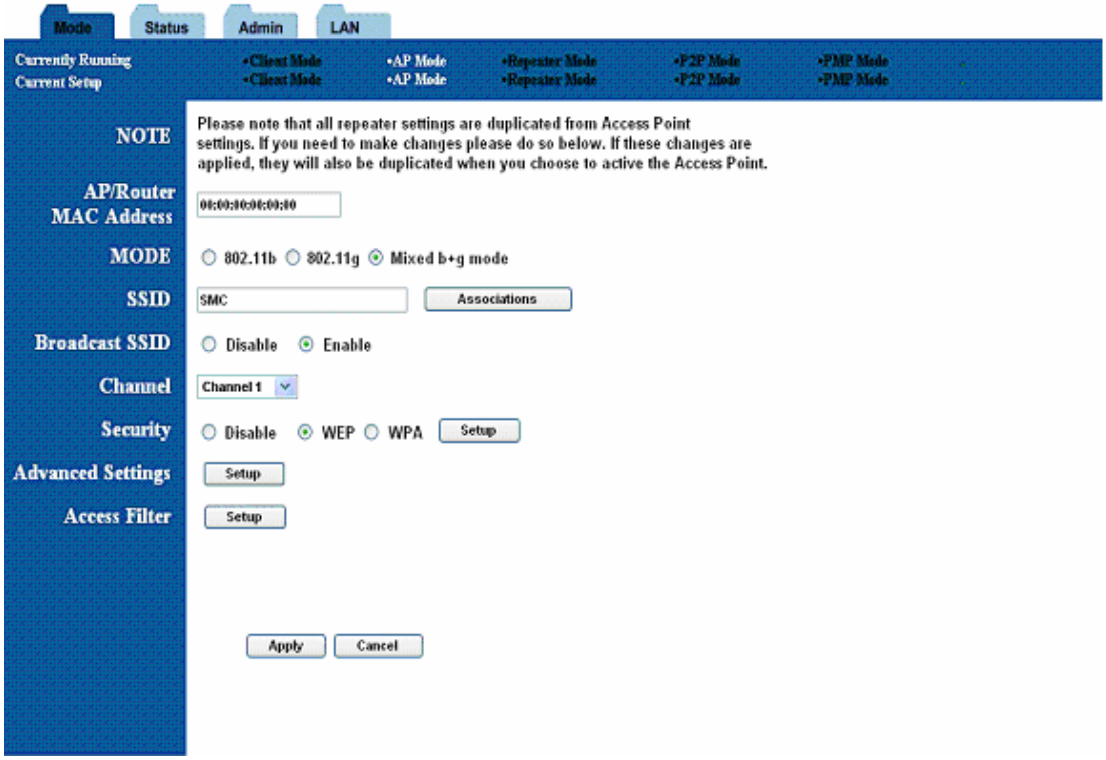


Table 7: Repeater Setup

Field	Description
AP/Router MAC Address	MAC address of AP/Router that this Repeater is connected to.
Mode	Selects 802.11g/b mode: 802.11g only, 802.11b only, or Mixed
SSID Broadcast	Enable/disable the SSID broadcast feature.
Channel	Selects the channel
Security	Selects the option to disable security or to use WEP or WPA security. If using WEP or WPA, click the Setup button to enter the key(s).
Advanced Settings	Click Setup to configure advanced settings.
Access Filter	Click Setup to configure the access filter

7.2 Security Setup

To enable security, select the desired security mode (WEP or WPA) from the setup page and click Setup to enter the keys. The following tables describe the security setup options in more detail.

Table 8: WEP Setup

Field	Description
WEP Length	Selects the WEP key length
Mode	Selects the WEP key format, ASCII or Hex
Passphrase	Passphrase used to generate the WEP keys. Click the Generate button to generate the keys.
Key 1-4	WEP keys
Default Tx key	Selects the default WEP key (1-4)

Table 9: WPA Setup

Field	Description
Authentication Method	Selects Pre-Shared Key (PSK) or 802.1x mode
Passphrase	WPA key
Group Re-Key Time	Group Re-Key interval (seconds)

7.3 Advanced Settings

The Advanced Settings page allows you to configure advanced Radio settings. The following table describes the setup options in detail.

Table 10: Repeater Advanced Settings Field

Field	Description
Beacon Interval	Beacon interval (in milliseconds)
RTS Threshold	RTS threshold (in bytes)
DTIM Interval	DTIM interval
Protection Mode	Allows user to force 802.11g protection (RTS/CTS) mode off.
Transmit Rate	Selects the transmit rate: Auto or a fixed rate
Preamble Type	Selects short preamble, long preamble or Auto

7.4 Access Filter

The Access Filter page allows you to configure the Repeater to allow or deny assocation to the Repeater based on the client' s MAC address. Up to 32 MAC addresses can be added to the list. The following table describes the setup options in detail.

Table 11: Repeater Access Filter Settings

Field	Description
MAC filtering	Enables/Disables MAC filtering mode
Filter List	Provides the option to allow or deny clients with MAC addresses listed
Filter MAC	Up to 32 MAC addresses can be listed, but only 16 can be viewed/modified at a time. This pulldown menu selects which group of 16 to view/modify.
MAC addresses	List of MAC addresses to filter

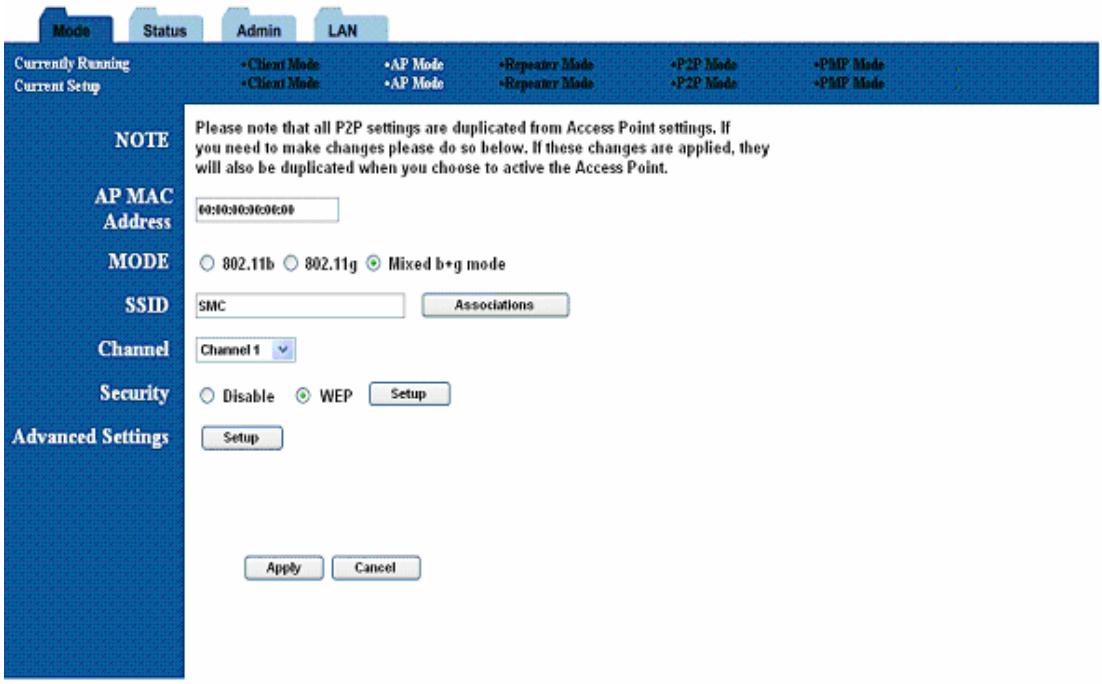
8. Point-to-Point (P2P) Setup

8.1 Basic Setup

To configure the P2P Bridge, select P2P from the Mode page and click Setup. The following table shows the basic setup options.

To set up the P2P bridge, you must enter the MAC address of the other P2P bridge you want to connect to this P2P bridge.

Figure 14: P2P Setup



8.2 Security Setup

To enable security, select WEP from the setup page and click Setup to enter the keys. The

following tables describe the security setup options in more detail.

Table 13: WEP Setup

Field	Description
WEP Length	Selects the WEP key length
Mode	Selects the WEP key format, ASCII or Hex
Passphrase	Passphrase used to generate the WEP keys. Click the Generate button to generate the keys.
Key 1-4	WEP keys
Default Tx key	Selects the default WEP key (1-4)

8.3 Advanced Settings

The Advanced Settings page allows you to configure advanced Radio settings. The following table describes the setup options in detail.

Table 14: P2P Advanced Settings

Field	Description
RTS Threshold	RTS threshold (in bytes)
DTIM Interval	DTIM interval
Protection Mode	Allows user to force 802.11g protection (RTS/CTS) mode off.
Transmit Rate	Selects the transmit rate: Auto or a fixed rate
Preamble Type	Selects short preamble, long preamble or Auto

9. Point-to-Multipoint (PMP) Setup

9.1 Basic Setup

To configure the PMP Bridge, select PMP from the Mode page and click Setup. The following table shows the basic setup options

To set up the PMP bridge, you must enter the MAC address(es) of the P2P bridge(s) you want to connect to this PMP bridge.

Figure 15: PMP Setup

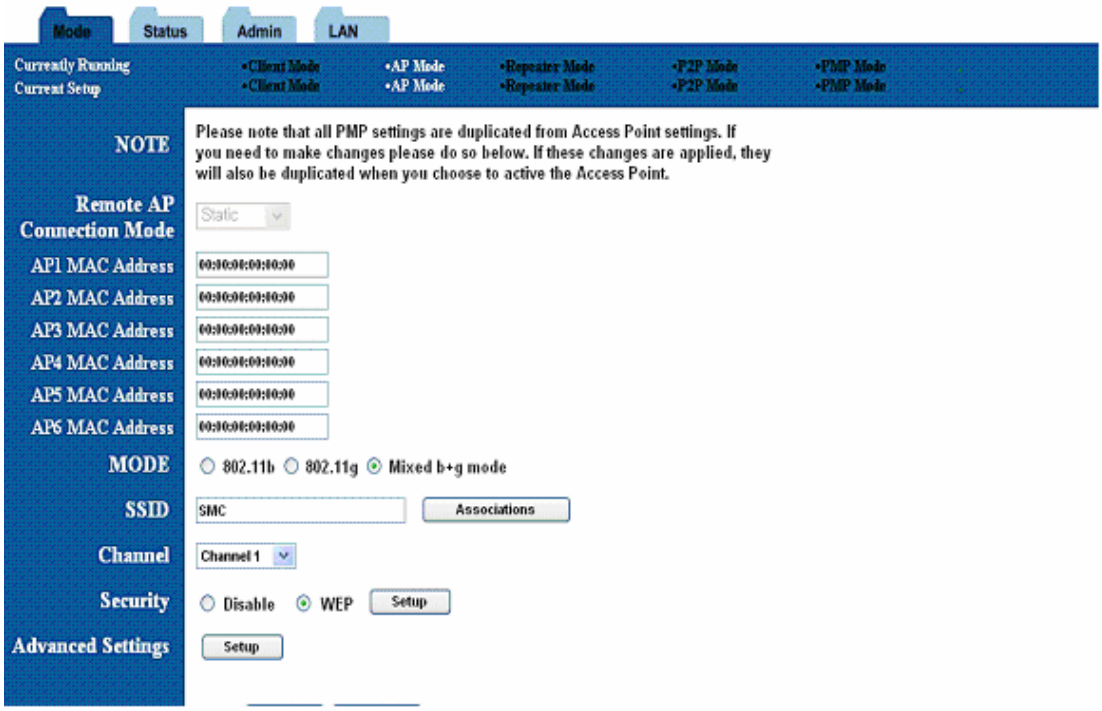


Table 15: PMP Setup

Field	Description
AP MAC Address (1-6)	MAC address(es) of the P2P bridges that are connected to this PMP bridge
Mode	Selects 802.11g/b mode: 802.11g only, 802.11b only, or Mixed
Channel	Selects the channel
Security	Selects the option to disable security or to use WEP security. If using WEP, click the Setup button to enter the key(s).
Advanced Settings	Click Setup to configure advanced settings.

9.2 Security Setup

To enable security, select WEP from the setup page and click Setup to enter the keys. The following tables describe the security setup options in more detail.

Table 16: WEP Setup

Field	Description
WEP Length	Selects the WEP key length
Mode	Selects the WEP key format, ASCII or Hex
Passphrase	Passphrase used to generate the WEP keys. Click the Generate button to generate the keys.
Key 1-4	WEP keys
Default Tx key	Selects the default WEP key (1-4)

9.3 Advanced Settings

The Advanced Settings page allows you to configure advanced Radio settings. The following table describes the setup options in detail.

Table 17: PMP Advanced Settings

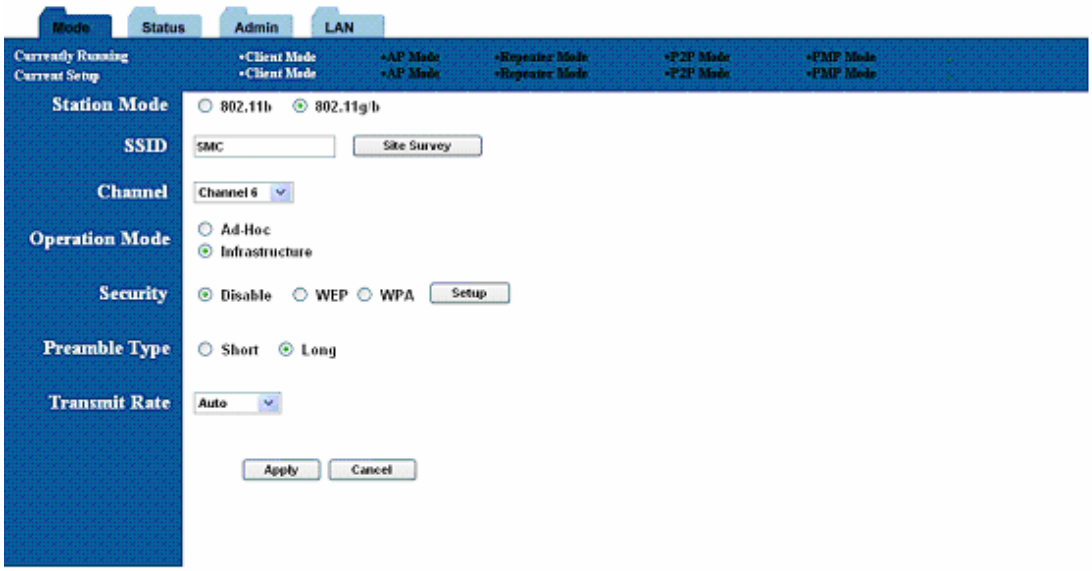
Field	Description
RTS Threshold	RTS threshold (in bytes)
DTIM Interval	DTIM interval
Protection Mode	Allows user to force 802.11g protection (RTS/CTS) mode off.
Transmit Rate	Selects the transmit rate: Auto or a fixed rate
Preamble Type	Selects short preamble, long preamble or Auto

10. Client Mode Setup

10.1 Basic Setup

To configure the Client, select Client from the Mode page and click Setup. The following table shows the basic setup options.

Figure 16: Client Bridge Setup



Field	Description
Station Mode	Selects 802.11g/b mode: 802.11b only or 802.11g/b
SSID	Wireless Network Name. You can enter it directly in this field or click the Site Survey button to select from a list of available networks.

Table 18: AP Setup (Continued)

Field	Description
Channel	Selects the channel (Ad-Hoc network only)
Operation Mode	Selects Ad-Hoc or Infrastructure mode
Security	Selects the option to disable security or to use WEP or WPA security. If using WEP or WPA, click the Setup button to enter the key(s).
Preamble Type	Selects short or long preamble
Transmit Rate	Selects the transmit rate: a fixed rate or Auto

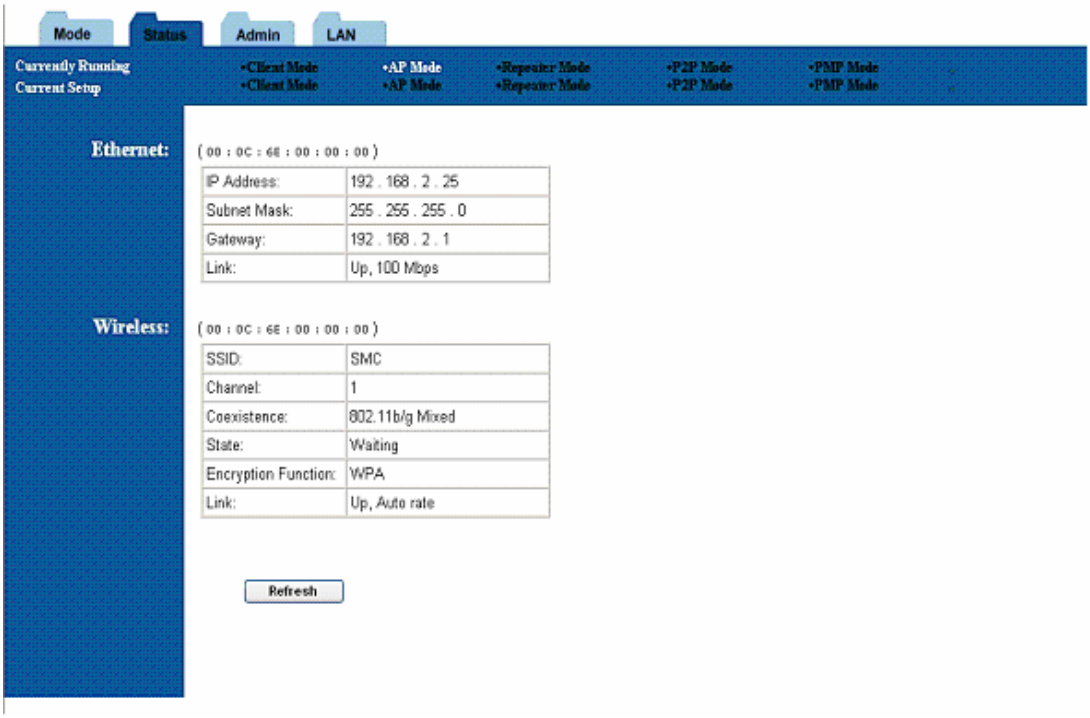
10.2 MAC Cloning

To enable MAC cloning mode, go to the MAC Cloning field on the LAN page and select Enabled. MAC cloning clones all the MAC addresses of the devices connected to the ethernet (wired) port to a single MAC address sent out wirelessly to an AP or Repeater.

11. Status Page

The status page reports relevant status information for the device, for both the ethernet and wireless interfaces.

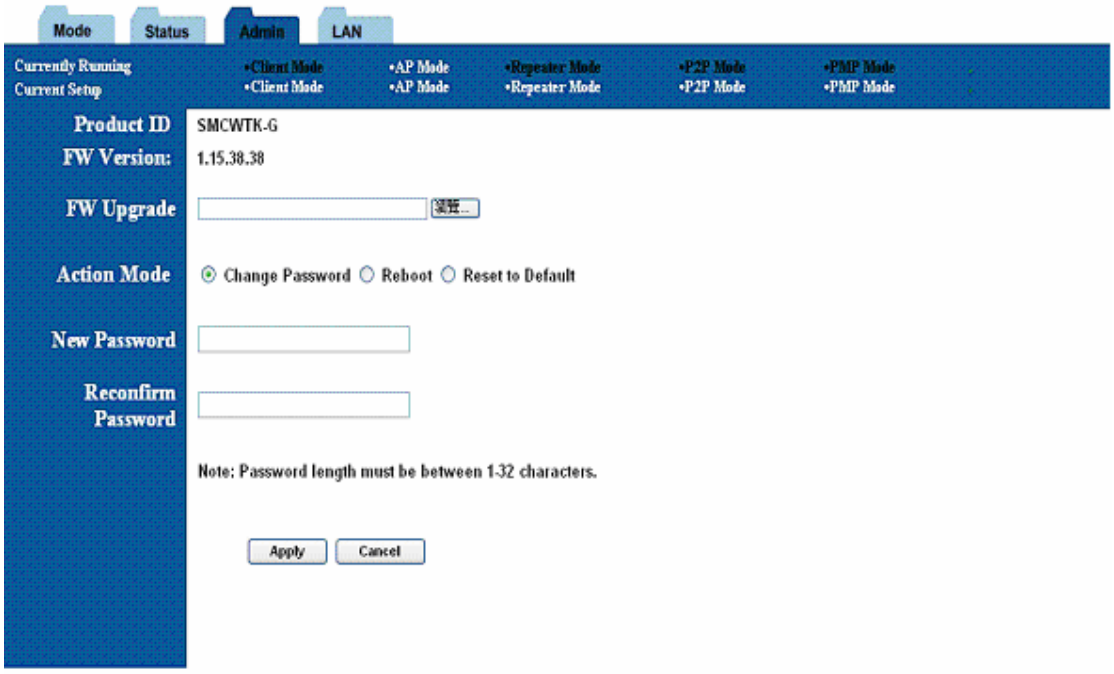
Figure 17: Status Page



12. Admin Page

The admin page lets you upgrade the device' s firmware or change the password.

Figure 18: Admin Page



12.1 Firmware Upgrade

To upgrade the firmware, click the Browse button and select the image file. Click Apply to

upgrade.

12.2 Update Password

To change the password, enter the new password in the New Password and Reconfirm Password fields and click Apply.

12.3 Reboot

To reboot, check the reboot radio and click Apply.

12.4 Reset to Default Setting

To reboot, check the reset to default radio and click Apply.

13. LAN Page

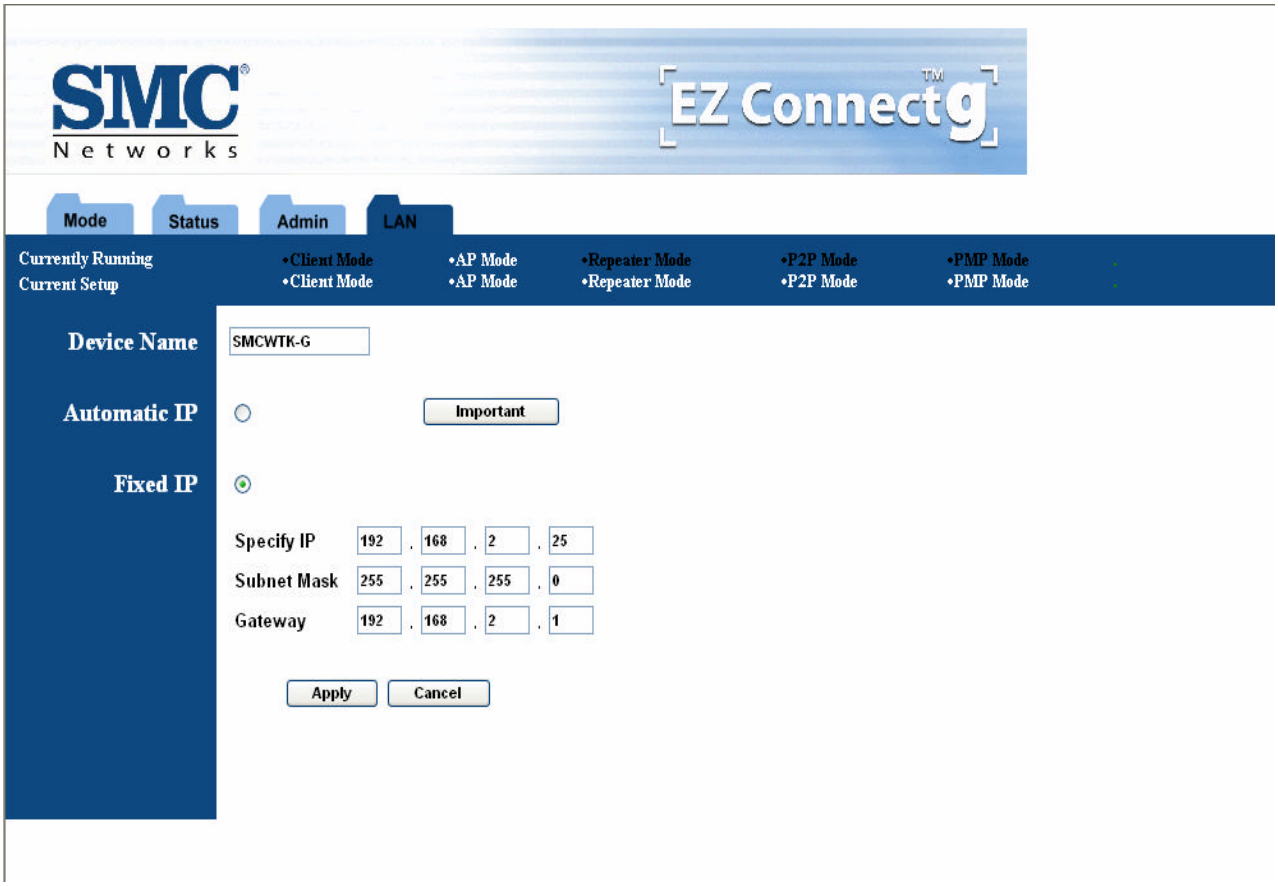
The LAN page lets you set the device' s IP address. The device can be configured to use an automatic (DHCP) address or a fixed IP address.

The default IP address is 192.168.2.25.

When the device is in Client mode, the LAN page also provides the MAC cloning option.

It is important that before you configure the SMC WTK-G device (regardless of the mode it is in) to Automatic IP, you should know how to determine the SMC WTK-G device' s IP address from the device it is connected to.

Figure 19: LAN Page



14. Utility

14.1 Configuration Utility

The **Configuration** utility is a disvocovery tool for an SMC WTK-G. This utility is available in the support CD that came with the SMC WTK-G package. Use the Configuration utility to find and condfig a SMC WTK-G near you.

Figure 20: Configuration Utility

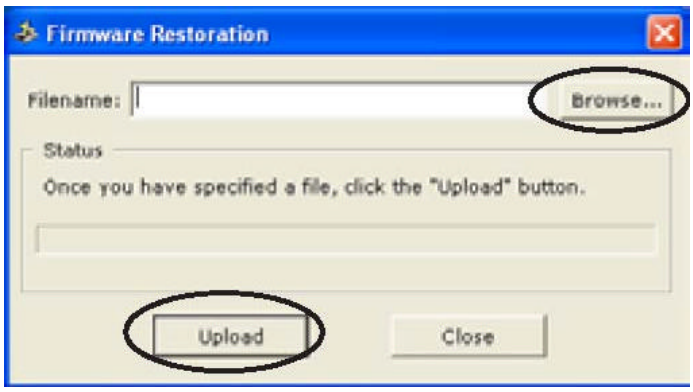
14.2 Firmware Restoration

The **Firmware Restoration** utility is a rescue tool for an SMC WTK-G that failed during a previous firmware upload. This utility is available in the support CD that came with the SMC WTK-G package. A failed firmware upgrade causes the ASUS Pocket Wireless AP to enter a failure mode. Use the Firmware Restoration utility to find and upload a new firmware for the SMC WTK-G.

To restore the firmware:

1. Visit the SMC website to download the latest firmware for the device.
2. Launch the Firmware Restoration utility from the Windows® desktop by clicking **Start** > **All Programs** > **SMC 802.11g Wireless Traveler' s Kit** > **Firmware Restoration**.
3. The **Firmware Restoration** window appears.
4. Click the **Browse** button to locate the firmware file.
5. After selecting the firmware file, click the **Upload** button to begin the firmware restoration.

Figure 21: Rescue Utility



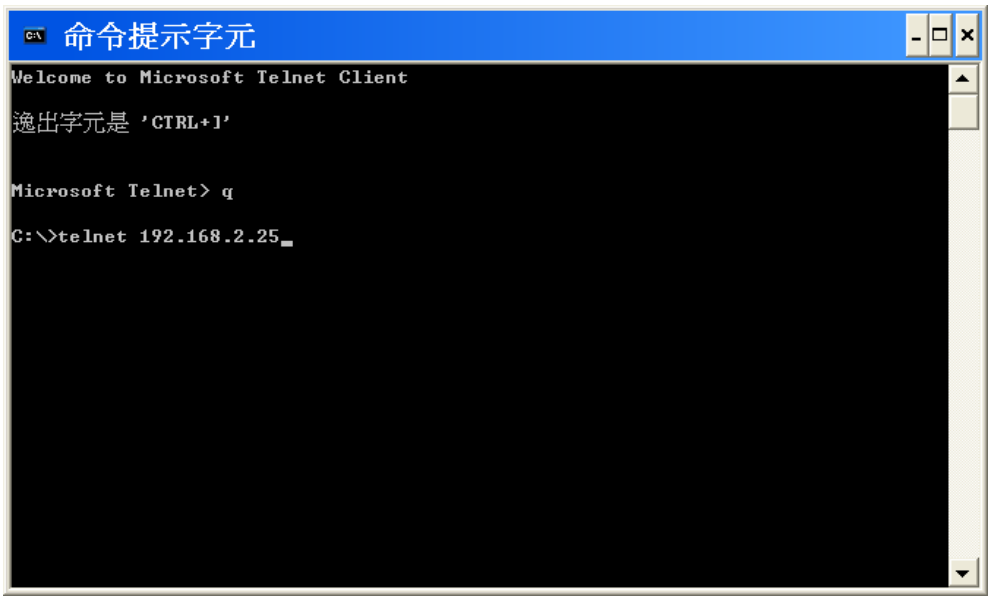
The restoration process takes about 3 to 4 minutes to finish. During restoration, the Power, and Wireless LEDs remain lit, while the Ethernet LED flashes slowly.

If you have problems uploading a firmware while using a network hub, try connecting your computer directly to the LAN port.

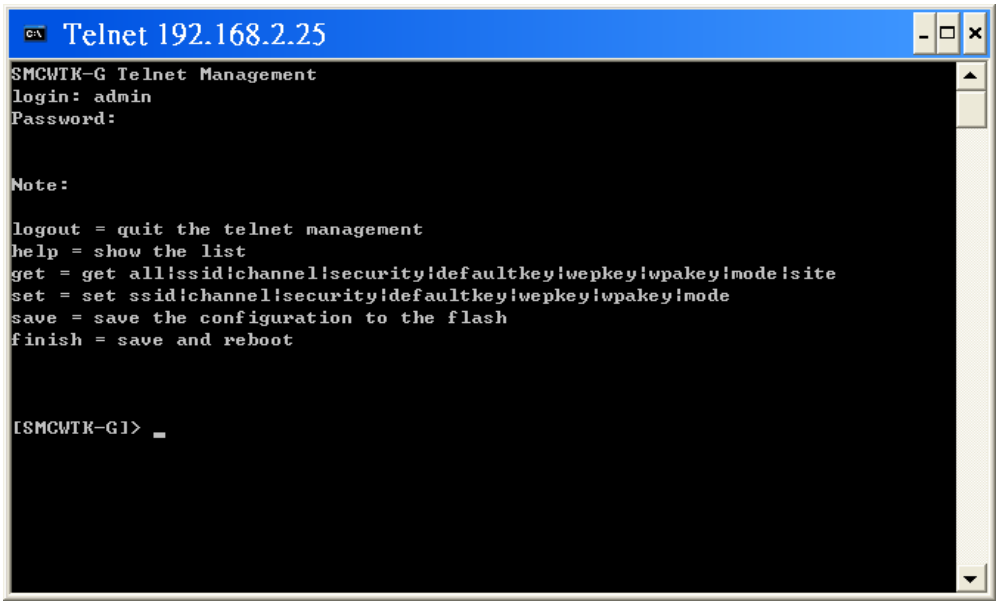
15. Telnet Management

15.1 telnet step by step

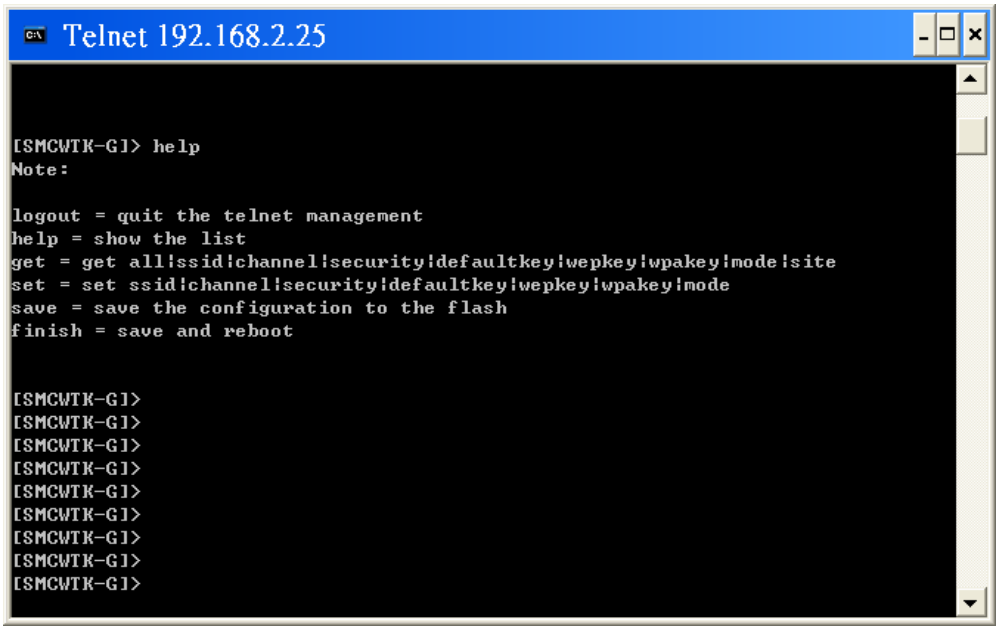
Step1: telnet to SMCWTK-G



Step2: fill in the login information.



Step3: type help for HELP.



Step4: type command by command reference table.

Table 19: Command Reference Table

Type	Command	Format Example
Get command	Get all	Get all
	Get ssid	Get ssid
	Get channel	Get channel
	Get security	Get security
	Get defaultkey	Get defaultkey
	Get wepkey	Get wepkey
	Get wpakey	Get wpakey
	Get mode	Get mode
	Get site	Get site
Set command	Set ssid	Set ssid MYSMC_AP0 (SSID: “MYSMC_AP0”)
	Set Channel	Set channel 12 (Channel: 12)
	Set Security	Set Security 0 (0 is for Disable)
	Set defaultkey	Set defaultkey 1 (Default WEP Key: 1)
	Set wepkey	Set wepkey 1 1234567890 (Wepkey1: 1234567890)
	Set wpakey	Set wpakey smcisgood! (Wepkey: “smcisgood!”)
	Set mode	Set mode 2 (SMCWTK-G change to Repeater mode)
Other command	Logout	Quit the telnet management.
	Save	Save the configuration to the flash
	Finish	Save and reboot

APPENDIX

Federal Communications Commission Statement

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.

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

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

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 on the supplied antenna.

Declaration of Conformity for R&TTE directive 1999/5/EC

Essential requirements – Article 3

Protection requirements for health and safety – Article 3.1a

Testing for electric safety according to EN 60950 has been conducted. These are considered relevant and sufficient.

Protection requirements for electromagnetic compatibility – Article 3.1b

Testing for electromagnetic compatibility according to EN 301 489-1 and EN 301 489-17 has been conducted. These are considered relevant and sufficient.

Effective use of the radio spectrum – Article 3.2

Testing for radio test suites according to EN 300 328-2 has been conducted. These are considered relevant and sufficient.