

WAP54A

54Mbps Wireless Network AP

User's Manual

Draft v. 1.3

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1 Introduction

1.1 Scope

The intent of this document is to familiarize you with the Access Point, its physical characteristics, setup, configuration, and usage.

1.2 Objectives

After reading this user's guide, you should be able to install, configure, control, and maintain the Access Point.

1.3 Intended Audience

The intended audience for this user's guide is evaluators of AP products. The reader is assumed to have conceptual and practical knowledge about AP concepts, features, and functions. This guide relies on the reader's familiarity with APs in general, while discussing the specific characteristics of the AP.

1.4 Features

AP implements an IEEE 802.11a wireless LAN (WLAN) AP or data-oriented Residential Gateway (RG) on a single PCB. The AP provides an IEEE 802.11a Access Point supporting up to 60 IEEE 802.11a station associations including the AP itself. Rates of 6 to 54 Mbps are supported in standard IEEE 802.11a mode. All transmission rates are supported across the lower and middle bands of the 5 GHz spectrum (5.15 to 5.35 GHz).

1.5 Package Contents

The AP is provided in a completely enclosed plastic housing with two 180° swivel antennas, a power supply, and a serial cable for use in AP software configuration. The AP Reference Design contains a single 10/100 Ethernet port. Using this Ethernet port, a RJ-45 cable, (not provided by) should be used to connect the AP to a wired Ethernet LAN.

1.6 System Requirements

The AP Contains a small boot executive that allows the main VxWorks system software to be downloaded using the Ethernet port over an FTP connection. The VxWorks system software can also reside in the Flash memory of the AP, which allows booting without the need to download VxWorks from the host PC over an FTP connection. A configuration file is created in Flash memory to store user configurable parameters such as WEP keys. A PC with an Ethernet connection is required to perform the initial VxWorks system software loading operation as well as AP configuration.

2 Getting to Know the Access Point

2.1 Front Panel

The Access Point (AP) has 3 LEDs, and a pair of side-mounted antennas that rotate 180° for alternative reception positioning and compact packaging.

LED 3 (Wireless Link)

LED 2 (Ethernet Link)

LED 1 (Power Status)

Table 1- LED Functionality

LED 1	Description
Off	No Power
On	Power On and Ready for Operation
Blink	Power On but Not Ready for Operation – at initial power on or reset, this indicates self-test or software loading; at other times, this indicates a system fault

LED2	Description
Off	No Ethernet Link Detected
Green On	100 Mbps Link Detected but No Activity
Green Blink	100 Mbps Link Activity – blink rate is proportional to activity
Amber On	10 Mbps Link Detected but No Activity
Amber Blink	10 Mbps Link Activity – blink rate is proportional to activity

LED 3	Description
Off	Wireless Link Disabled
Very Slow Blink	Looking for Network Association
Slow Blink	Associated with Network but No Activity
Fast Blink	Associated with Network – blink rate is proportional to activity

2.2 Rear Panel

The rear panel of the AP has a RJ-45 Ethernet jack, a reset button, and a power supply connector,

Power Supply Connector

Reset Button

RJ-45 Ethernet Jack

- The RJ-45 Ethernet jack is provided for 10/100 Mbps connectivity to a wired Ethernet LAN. The Ethernet subsystem is based on a single chip 10/100 Mbps integrated PCI Ethernet Media Access Controller (MAC) + PHY (DP83815) from National Semiconductor Corporation.
- An on-board MAX6713 reset circuit provides reset to processor, memory, and PCI devices. A manual push-button reset option provides easy generation of the reset signal without cycling power to the AP. A 5V power supply is provided to power the AP.
- A 5V power supply is provided and is plugged into the power supply connector of the AP.

3. Network Attachment and Configuration of the Access Point

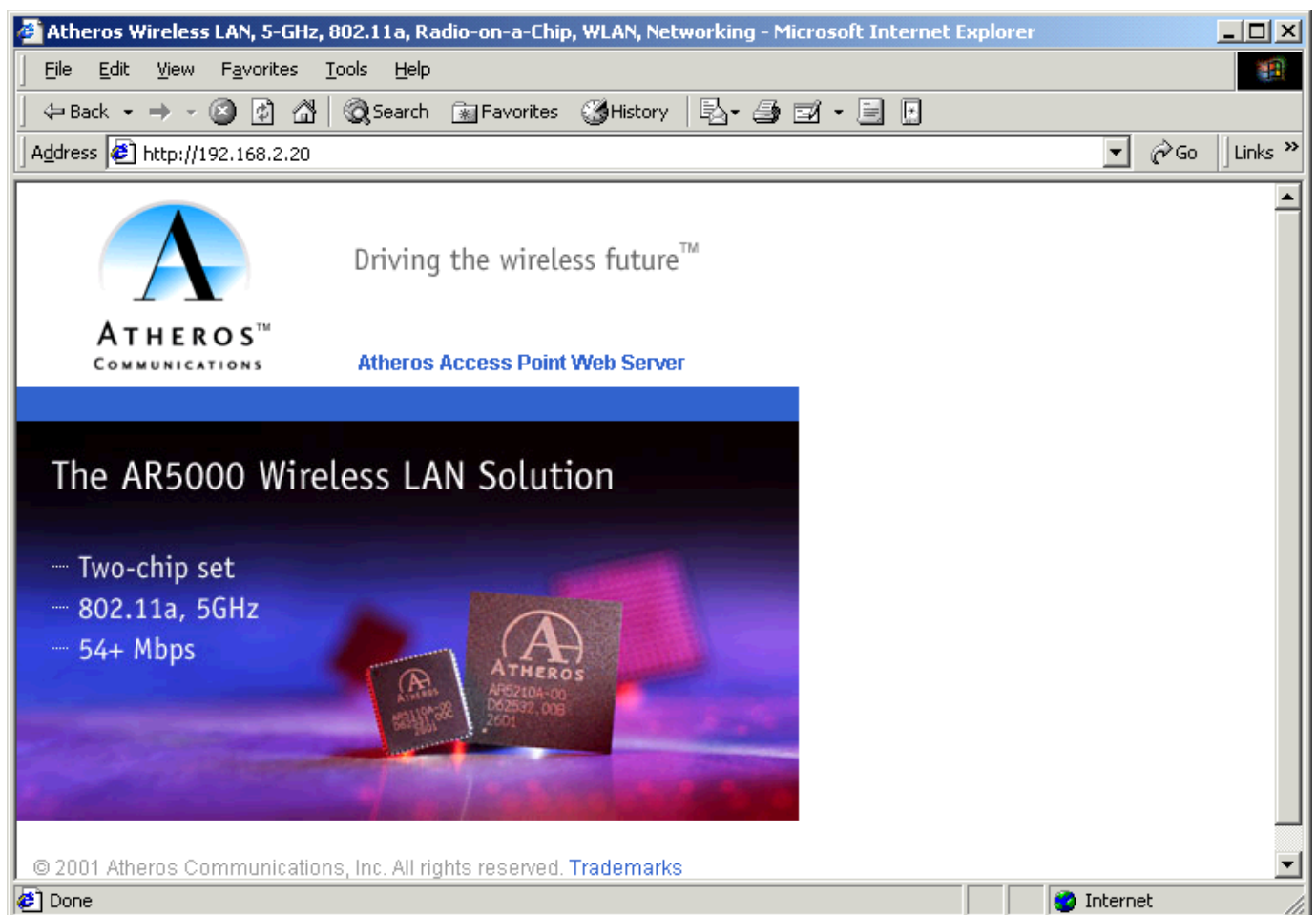
3.1.1 Configuring the AP

When the VxWorks system software is loaded, the AP has to be configured to set some options such as the channel frequency and Service Set Identifier (SSID). This can be done through a web browser with access to the built-in AP web server.

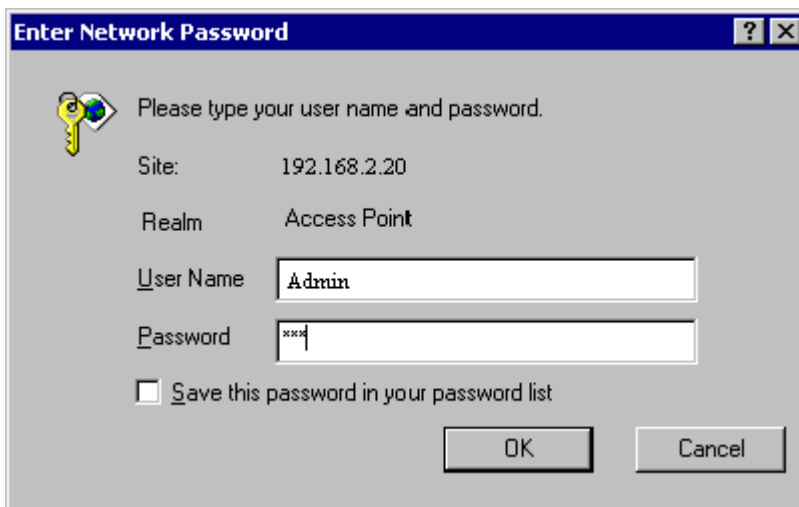
3.1.2 Web Browser

The following procedures show the steps to configure the channel frequency and SSID using a web browser:

1. Launch a web browser (Netscape Navigator or Internet Explorer are examples of commonly used web browsers) from the Host PC or other PC with IP address 192.168.2.10, and subnet address as 255.255.0.0, and enter the IP address that is assigned to the AP as the URL, for example `http://192.168.2.20`.



2. Select the Web Server hotlink. A dialog box will appear to request login authorization.



The dialog box is titled "Enter Network Password" and contains the following fields and controls:

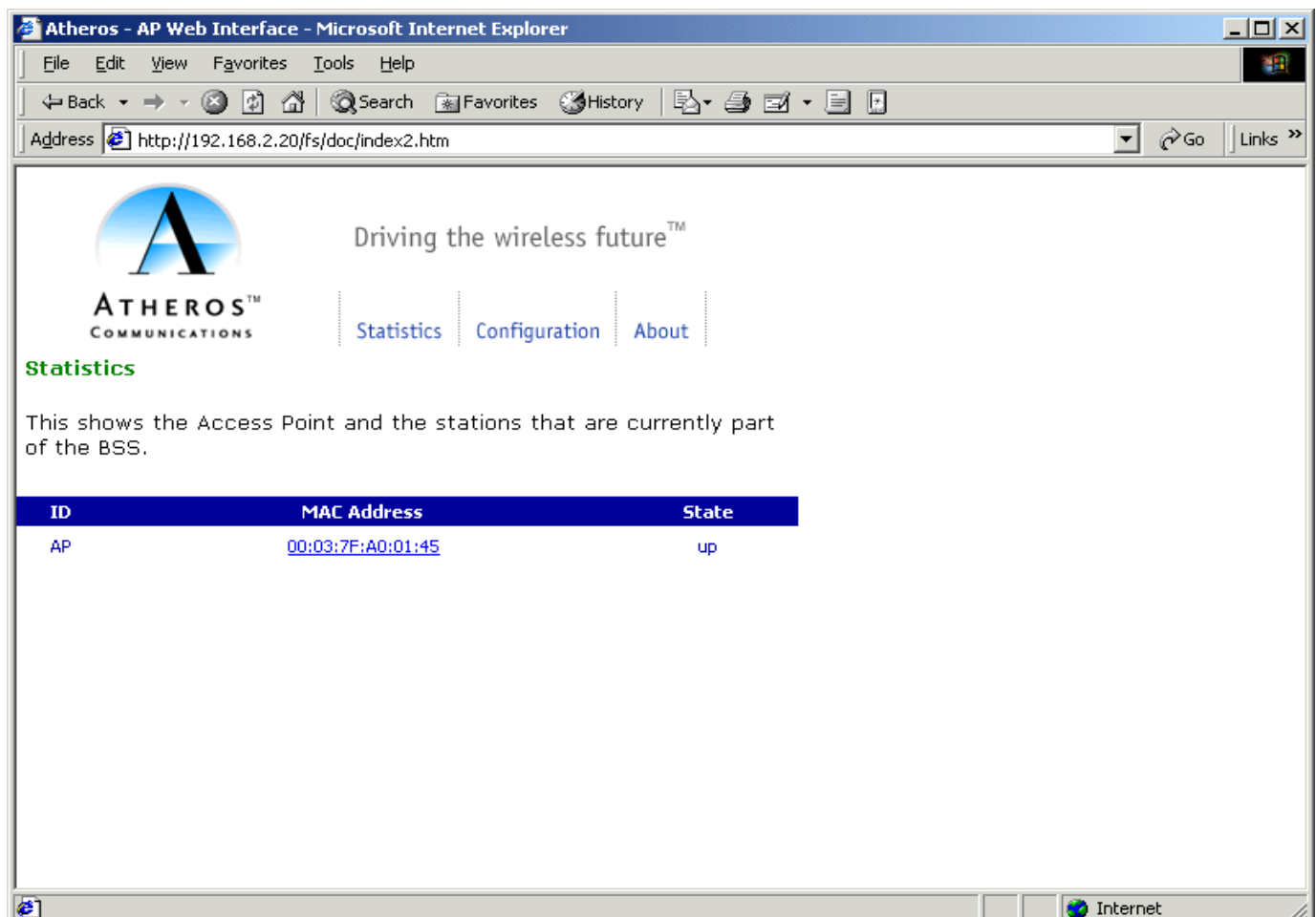
- Site: 192.168.2.20
- Realm: Access Point
- User Name: Admin
- Password: xxx
- ☐ Save this password in your password list
- OK button
- Cancel button

3. Enter the information as follow:

Log in: Admin (case sensitive)

Password: 5up

Click OK to complete the login process. The Access Point Statistic web page appear.



The screenshot shows the Atheros - AP Web Interface in Microsoft Internet Explorer. The address bar shows the URL <http://192.168.2.20/fs/doc/index2.htm>. The page features the Atheros Communications logo and the tagline "Driving the wireless future™". Navigation links for Statistics, Configuration, and About are visible. The Statistics section is active, displaying a table of the Access Point and its stations.

Statistics

This shows the Access Point and the stations that are currently part of the BSS.

ID	MAC Address	State
AP	00:03:7F:A0:01:45	up

3.1.3 General Configuration Page

1. Click on the **Configuration** hotlink to enter the wireless setting page.

Atheros Web Interface - AP Setup (FCC Base) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print Mail News RSS

Address http://192.168.2.20/fs/ssi/setup_frame_fcc.htm Go Links »

Driving the wireless future™

ATHEROS™ COMMUNICATIONS

[Statistics](#) [Configuration](#) [About](#)

[General](#) | [Shared Keys](#) | [Per Station Privacy](#) | [Configuration Script](#) | [Firmware Update](#)

Configuration -> **General**

SSID:

System Name:

Radio Channel:

Enable Auto Channel Select: ☒

Turbo: Off

Enable Encryption: ☐

Authentication Type: ☒ Open System ☐ Shared Key

Internet

2. The summarizes of the **General Configuration** data fields of the AP.

SSID	Identification of the AP. Enter a number or address between 1 and 32 characters in length that the STAs are associating with in Infrastructure mode. You can specify more than one AP in an SSID. Use the System Name field to uniquely identify each AP.
System Name	Specifies a unique name for AP. Enter a unique text string of up to 32 characters in length.
Radio Channel	Select the desired frequency of operation from the drop-down menu. The radio frequencies that appear in the Radio Channel drop-down menu are dependent on the Regulatory Domain set specified.
Enable Auto Channel Select	Select the checkbox to automatically search through the frequency list to find an unused channel. If a radio frequency is specified in the Radio Channel field and the Auto Channel Select is enabled. The designated frequency in the Radio Channel field will be the first frequency auto-attempted before scanning the remaining list.
Turbo Mode	Allows transmission on two channels thereby improving data rate. To enable/disable Turbo Mode, click on the appropriate Turbo button.
Enable Encryption	Enables Wired Equivalent Privacy on the AP
Authentication Type	Specifies the authentication type used. “Open” specifies no authentication. A STA must be authenticated before it can be associated to an AP.
IP Address	Specifies the IP address of the AP.
Subnet Mask	Specifies the subnet mask for the AP

3. Enter **SSID** for example “Gemtek5G”, The SSID name must not exceed 32 characters.

4. Select one of the **Radio Channel** from range 5.18GHz to 5.32GHz. This value specify the stations under AP’s associated in Infrastructure mode.

Atheros Web Interface - AP Setup (FCC Base) - Microsoft Internet Explorer

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Configuration -> General **Update** **Help**

SSID:

System Name:

Radio Channel:

Enable Auto Channel Select: ☒

Turbo: Off **Turn Turbo On**

Enable Encryption: ☐

Authentication Type: ☒ Open System ☐ Shared Key

IP Address: . . .

Subnet Mask: . . .

Default Gateway Address: . . .

UserName:

Password:

Internet

- 4 Click on the **Update** button to commit to the system.

Update

- 5 After clicked the **Update** button, you have to apply the **REBOOT AP** button to effect the setting and reboot the AP.

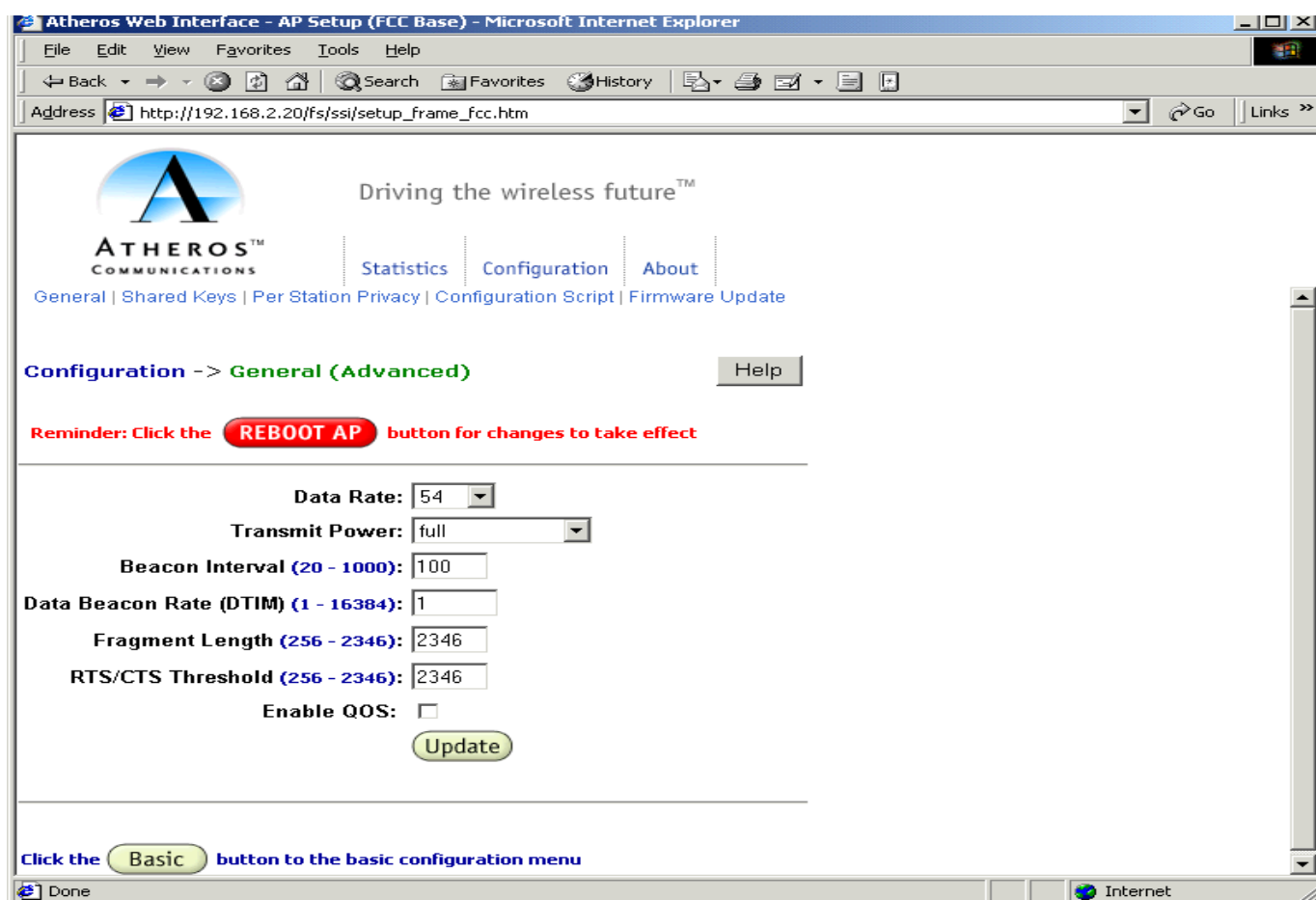
Reminder: Click the **REBOOT AP** button for changes to take effect

3.1.4 General Advanced Configuration Page

1. Click on the Advanced button from the left end of the **Configuration** page.

Click the **Advanced** button to the advanced configuration menu

2. The Advanced Configuration Page will appear. It allow you to enter advanced information of the AP.



3. The summarizes data field :

Advanced Configuration Field	Description
Data Rate	Specifies rate of data transmission. Select the desired rate from the drop-down menu. The Best selection will adapt the rate to

	the best available.
Transmit Power	Specifies the level of transmit power. Specify the value of the transmit power from the drop-down menu. Decrease the transmit power if more than one AP is co-located using the same channel frequency.
Beacon Interval	Specifies the Beacon Interval value. Enter a value between 20 and 1000.
Data Beacon Rate	Specifies the Data Beacon Rate. Enter a value between 1 and 16384 that specifies the Delivery Traffic Indication Message (DTIM).
Fragment Length	Specifies the fragment length. Enter a value between 256 and 2346.
RTS/CTS Threshold	Specifies the value of the RTS/CTS threshold. Enter a value between 256 and 2346.
Enable QOS	Use the checkbox to allow the AP to participate in a QOS environment.

- Click on the **Update** button to commit to the system.



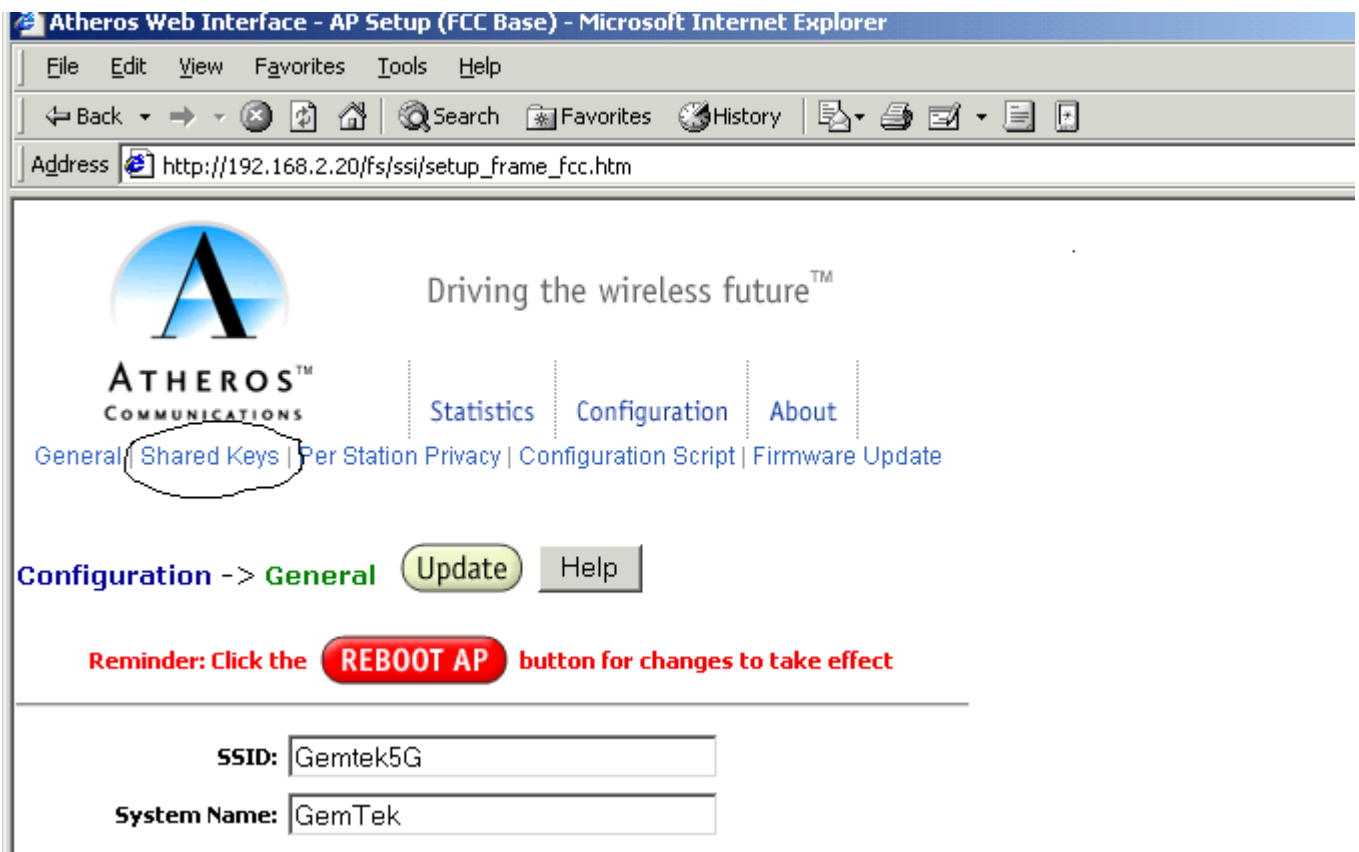
- After clicking the **Update** button, you have to apply the **REBOOT AP** button to effect the setting and reboot the AP.

Reminder: Click the **REBOOT AP** button for changes to take effect



3.1.5 Shared Key Configuration

- Click on the **Shared Keys** tab highlighted with the black circle.



2. The Shared Keys Configuration allow you to:
 - ~ Select default shared key encryption keys
 - ~ Specify the key length
 - ~ Specify the shared WEP's keys

Configuration -> Shared Keys Update Help

Reminder: Click the REBOOT AP button for changes to take effect

Default:	Encryption Key	Key Length
1: ☒		None
2: ☐		None
3: ☐		None
4: ☐		None

3. Click on the **Update** button to commit to the system.

Update

4. After clicked the **Update** button, you have to apply the **REBOOT AP** button to effects the setting and reboot the AP.

Reminder: Click the **REBOOT AP button for changes to take effect**

5. The Wired Equivalent Privacy Settings.

WEP: Disable					WEP is disabled. Any STA can access to the network
WEP: Enable					
Shared key	ACL				WEP
	ACL	MAC address	Key Map	Permission	
No	Disable	No	No	No	WEP is disabled. Any STA can access to the network
Yes	Disable	No	No	No	Only STA with matched shared key can access to the network
Yes	Enable	Yes	No	Allow	1. STA with matched MAC ID can access to the network 2. Any STAs with matched shared key are also allowed to access to the network
Yes	Enable	No	Unique key	Allow	1. STA with matched unique key can access to the network 2. Any STAs with matched shared key are also allowed to access to the network
Yes	Enable	Yes	Unique key	Allow	1. STA with matched MAC ID and matched unique key can access to the network 2. Any STAs with matched shared key are also allowed to access to the network
X	Enable	Yes	No	Deny	STA with the matched MAC ID is blocked from accessing the network
X	Enable	No	Unique key	Deny	STA with the matched unique key is blocked from accessing the network
X	Enable	Yes	Unique key	Deny	STA with the matched MAC ID and unique key is blocked from accessing the network
Yes	Strict	x	x	x	1. Only STA with MAC ID and/or unique key matched to the setup in ACL can access to the network. 2. The STAs with only shared key are blocked from accessing the network.

Federal Communication Commission Interference Statement

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

