

# Dual Band Wireless Access Point



## User's Manual

Version: 1.2

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## Revision History

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<b>Version</b>	<b>Date</b>	<b>Notes</b>
1.0	September 12, 2003	Initial Version
1.1	December 23, 2003	Modified features, package contents, screen captures, FCC statement, specifications
1.2	March 30, 2004	Update wireless screen captures and descriptions

# 1 Introduction

The Dual Band Wireless Access Point operates seamlessly and simultaneously in both the 2.4 GHz and 5 GHz frequency spectrums supporting the 802.11b (2.4GHz, 11Mbps) and the newer, faster 802.11a (5GHz, 54Mbps) and 802.11g (2.4GHz, 54Mbps) wireless standards. It's the best way to add wireless capability to your existing wired network, or to add bandwidth to your wireless installation.

To protect your wireless connectivity, the Dual Band Wireless Access Point can encrypt all wireless transmissions through 64/128/152-bit WEP data encryption. The MAC address filter lets you select exactly which station has access to your wireless network. Dynamic Frequency Selection (DFS) puts your network on the cleanest channel in your location. With the Dual Band Wireless Access Point, you'll experience the best wireless connectivity available today.

## 1.1 Features & Benefits

Features	Benefits
2.4GHz IEEE802.11b/g standard and 5GHz IEEE802.11a standard compliant	Fully interoperable with IEEE802.11a/b/g compliant products.
Dual Radios for Atheros 802.11a and Atheros 802.11g/b	The 802.11a and 802.11g wireless LANs can be used simultaneously.
3-way bridging for 802.3 and 802.11a/g networks	Enable the transfer of data among different kinds of networks.
Wi-Fi Protected Access	Enhance authentication and security.
High speed data rate up to 54Mbps/108Mbps in "Super A/G" mode in 11a/g mode	Capable of handling heavy data payloads such as MPEG video streaming.
DFS/TPC for European operation (IEEE802.11h)	Meets requirements of vertical applications using 802.11a and 802.11g in Europe.
Multi country Roaming (802.11d)	Automatically adjusts regulatory domain to operate in different countries.
64/128/152-bit WEP data encryption	Powerful data security.
MAC address filtering	Ensures secure network connections.
Remote Configuration via Web-browser/Telnet	Easy to configure or manage the device remotely.
Firmware upgrade through Web-browser	Easy to upgrade the firmware to reduce operations overhead.

## 1.2 Package Contents

- One Access Point
- One Power Adapter
- One CAT 5 UTP Cable
- One Fast Start Guide
- One CD-ROM with User's Manual Included

## 2 Understanding the Hardware

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### 2.1 Hardware Configuration

- **RJ-45 Ethernet Connector** – Provides 10/100 Mbps connectivity to a wired Ethernet LAN.
- **RS-232 Console Connector** – Provides Command Line Interface (CLI) to view and modify the configuration of the AP from a terminal or PC through a telnet connection.
- **Reset Button** – By holding this down for more than five seconds, the AP will reset to its factory default settings.
- **Power Supply Connector** – Connects to the power adapter.

### 2.2 Hardware Installation

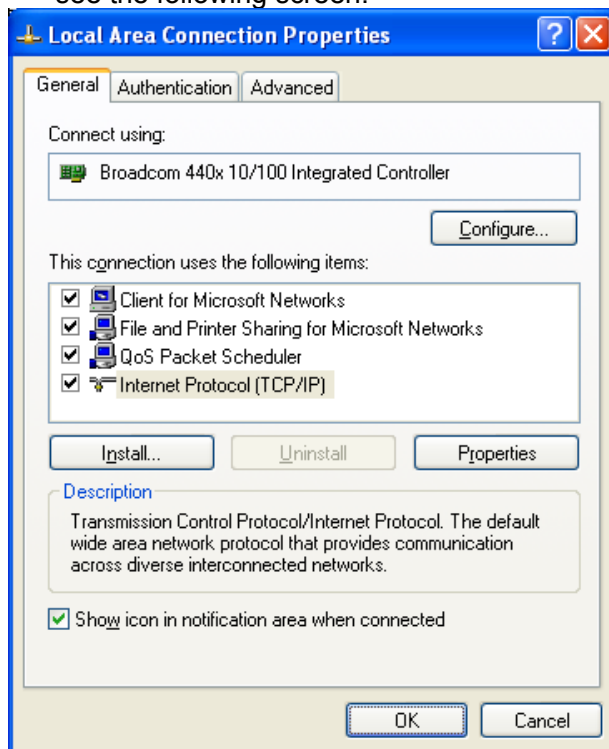
- A. Configure your notebook or PC with a wireless LAN card.
- B. For a wired LAN, connect your PC's Ethernet port to the AP's LAN port via an Ethernet cable.
- C. For WLAN, position the Access Point in a proper position.
- D. Plug in the power cord into the power outlet.

## 3 PC Configuration

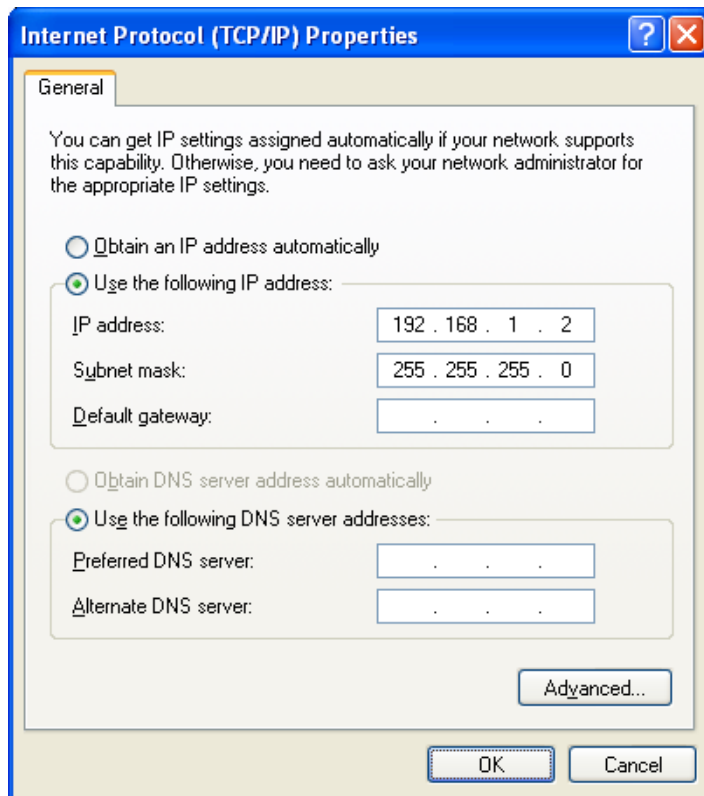
### 3.1 TCP/IP Configuration

Follow the steps below in order to configure the TCP/IP settings of your PC.

- A. In the Control Panel double click **Network Connections**, and then double click on the connection of your Network Interface Card (NIC). You will then see the following screen.



- B. Select **Internet Protocol (TCP/IP)** and then click on the **Properties** button. This will allow you to configure the IP address of your PC. You will then see the following screen.

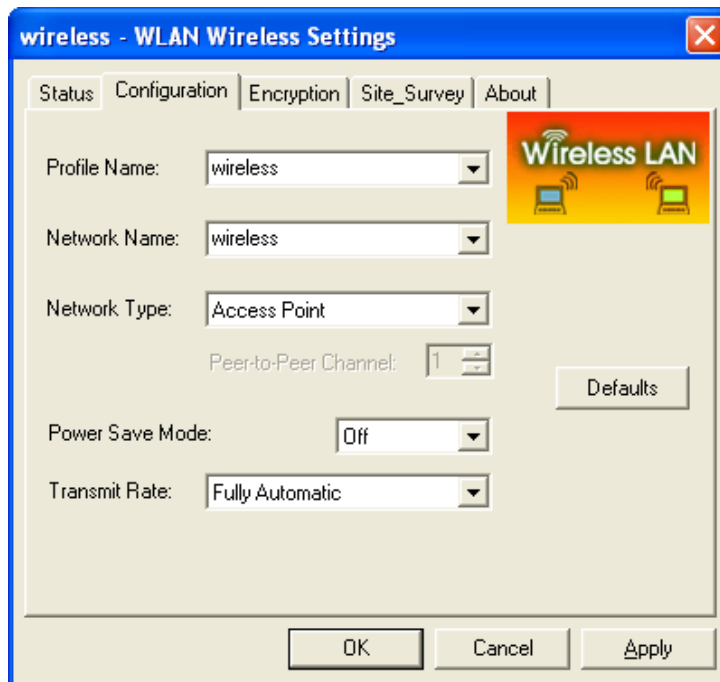


- C. Select **Use the following IP address** radio button, and then enter an IP address and subnet mask for your PC. Make sure that the Access Point and your PC are on the same subnet. The default IP address and subnet mask of the Access Point are **192.168.1.1** and **255.255.255.0** respectively.
- D. Click on the **OK** button, your PC's TCP/IP settings have been configured.

## 3.2 Wireless LAN Configuration

Follow the steps below in order to configure the Wireless LAN settings.

- A. Launch the **WLAN Client Utility** and click on the **Configuration** tab.



- B. **Profile Name:** enter a name for this profile.
- C. **Network Name:** enter the SSID. (Default name: Any)
- D. **Network Type:** select **Access Point** from the drop-down list.
- E. **Power Save Mode:** Select **Off** or **On** from the drop-down list.
- F. **Transmit Rate:** select **Fully Automatic** from the drop-down list.
- G. Click on the **OK** button.



## 4 Web Configuration

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### 4.1 Logging In

- To configure the Access Point through the web-browser, enter the IP address of the Access Point (default: 192.168.1.1) into the address bar of the web-browser, and press **Enter**.
- You will then see the login window. Enter **admin** as the User name and **iktpw** as the Password and then click on the **OK** button.



- You can also change the username and password under the **Administrator Settings** option. Refer to section 4.3.1 **Administrator Settings** to change the username and password.
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### 4.2 Getting Familiar with the GUI

- After logging in, the first page that is displayed in the **Status** page.
- The GUI consists of three parts and is displayed in the image below:
  - Navigation Bar**: used to navigate through the available options.
  - Main Page**: used to view and configure the AP's settings.
  - Top Right-hand Corner**: quick buttons for **Home**, **Exit**, and **Reset**. Click on the **Home** button to return to the status page. Click on the **Exit** button to logout, and click on the **Reset** button to restart the AP.

Status	
<b>LAN</b>	
IP	192.168.1.1
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
MAC Address	00:02:6F:2E:03:E2
<b>Wireless 11a</b>	
SSID	Wireless Network
Channel	SmartSelect
Wireless MAC Address	00:02:6F:20:42:3F
<b>Wireless 11g</b>	
SSID	Wireless Network
Channel	SmartSelect
Wireless MAC Address	00:02:6F:20:42:40
<b>System Information</b>	
System Up time	00:12:44
Firmware Version	1.6

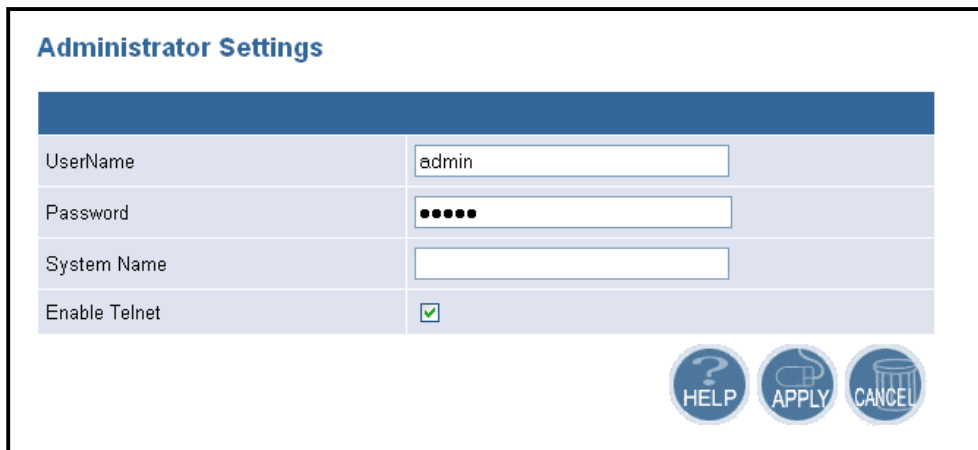
### 4.3 System

- System
  - ▶ Administrator Setting
  - ▶ Firmware Upgrade
  - ▶ Configuration Tools
  - ▶ Factory Default
  - ▶ Reset
- LAN
- Wireless
- Statistics

- ▶ Click on the **System** link on the navigation bar, you will then see five options: Administrator Settings, Firmware Upgrade, Configuration Tools, Factory Default, and Rest. Each one is described in detail below.

### 4.3.1 Administrator Settings

- Click on the **Administrator Settings** link. On this page you can configure the user name, password, system name and telnet.
- Set another username and password to restrict management access to the Access Point.



The screenshot shows the 'Administrator Settings' page. It features a table with four rows for configuration: 'UserName' (value: admin), 'Password' (value: masked with dots), 'System Name' (empty), and 'Enable Telnet' (checked). At the bottom right, there are three circular buttons: 'HELP' (with a question mark), 'APPLY' (with a checkmark), and 'CANCEL' (with an 'X').

Administrator Settings	
UserName	admin
Password	•••••
System Name	
Enable Telnet	<input checked="" type="checkbox"/>

- **Username:** enter a new user name.
- **Password:** enter a new password.
- **System Name:** enter a unique name for this AP.
- **Enable Telnet:** place a check in this box if you would like to allow telnet access to this device.
- Click on the **Apply** button to confirm and save the changes.

### 4.3.2 Firmware Upgrade

- Click on the **Firmware Upgrade** link. This page is used to upgrade the firmware on the AP.

#### Firmware Upgrade

Host Name	<input type="text"/>
User Name	<input type="text"/>
Password	<input type="text"/>
Image Path	<input type="text"/>
Image Name	<input type="text"/>




- **Host Name:** enter the host name or host IP address.
- **User Name:** enter the user name for the host.
- **Password:** enter the password for the host.
- **Image Path:** enter the path of the image file.
- **Image Name:** enter the name of the image file.
- Click on the **Apply** button to confirm and save the changes.

### 4.3.3 Configuration Tools

- Click on the **Configuration Tools** link on the navigation bar, you will then see the **Configuration Script** page. This page allows you to develop a script for an application.

### Configuration Script

Host Name	<input type="text"/>
User Name	<input type="text"/>
Password	<input type="text"/>
Script Path	<input type="text"/>
Script Name	<input type="text"/>


- **Host Name:** enter the host name for the script resides.
- **User Name:** enter the user name of the host.
- **Password:** enter the password of the host.
- **Script Path:** enter the path of the script file.
- **Script Name:** enter the name of the script file.
- Click on the **Apply** button to confirm and save the changes.

#### 4.3.4 Factory Defaults

- Click on the **Restore** button of the Access Point to perform a reset and restore the original factory settings.

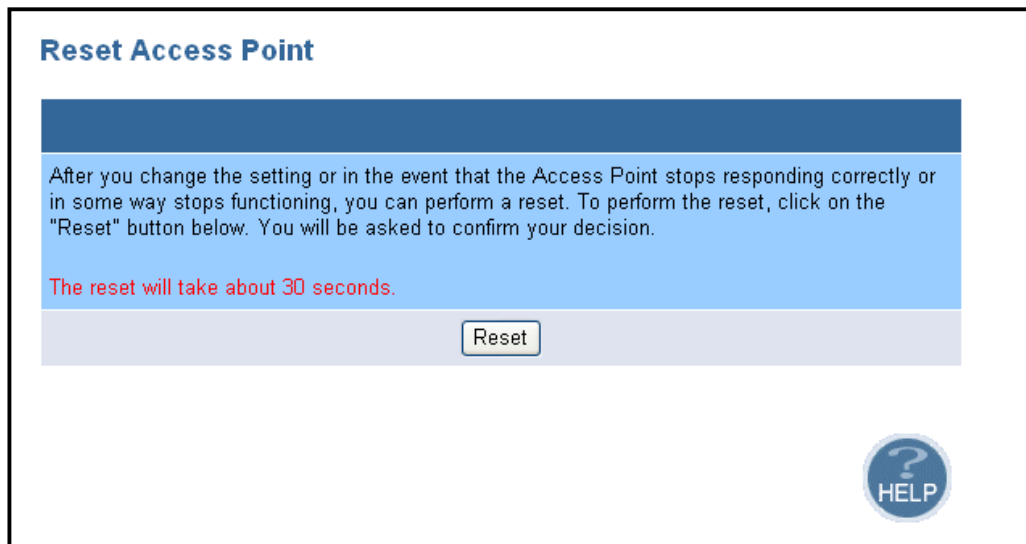
### Restore Factory Default

To restore the factory default settings of the Access Point, click on the "Restore" button. You will be asked to confirm your decision.



### 4.3.5 Reset

- After you change the settings or in the event that the Access Point stops responding correctly or in some way stops functioning, you can perform a reset.
- To perform the reset, click on the **Reset** button, you will then be asked to confirm your decision, click on the **OK** button.



### 4.4 LAN

- Click on the **LAN** link on the navigation bar, and then click on **LAN Settings**. You will then see the LAN Settings page. On this page you can configure the LAN IP, subnet mask, and default gateway IP addresses.

The screenshot shows a web interface titled "LAN Settings". It features a blue header bar. Below the header, there is a table with three rows for configuration:

IP Address	192	.	168	.	1	.	1
Subnet Mask	255	.	255	.	255	.	0
Default Gateway Address	0	.	0	.	0	.	0

At the bottom right of the form, there are three circular buttons: "HELP" (with a question mark icon), "APPLY" (with a refresh icon), and "CANCEL" (with a trash can icon).

- **IP Address:** enter the IP address of the Access Point.
- **Subnet Mask:** enter a subnet mask for the IP address.
- **Default Gateway Address:** enter a gateway IP for the Access Point.

- Click on the **Apply** button to confirm and save the changes.

## 4.5 Wireless

- Click on the **Wireless** link on the navigation bar, you will then see three options: General, 802.11a, and 80211g.. Each one is described in detail below.

### 4.5.1 General

- Click on the **General** link on the navigation bar. On this page you can configure the 11a or 11g radio.

The screenshot shows a configuration page for a Dual Band Wireless Access Point. It is divided into two main sections: **Wireless 11a** and **Wireless 11g**. Each section has a header bar and a form area. In the **Wireless 11a** section, the 5GHz Radio is set to **Enable**. The device type is set to **Access Point**. In the **Wireless 11g** section, the 2.4GHz Radio is set to **Enable**. The device type is also set to **Access Point**. Both sections have a **Remote AP SSID** field containing the text "Wireless Network" and a **Site Survey** button. At the bottom right of the form, there are three circular buttons: **HELP** (with a question mark), **APPLY** (with a checkmark), and **CANCEL** (with a trash can icon).

- **5 GHz Radio:** select **Disable** or **Enable** for the 2.4GHz radio.
- Select a radio button for the type of device you would like this to be. Options available are: **Access Point**, **Wireless Client**, and **Wireless Repeater**. If you select **Access Point**, you are not required to enter any additional information. If you select **Wireless Client**, you are required to enter the MAC address of the remote Access Point. If you select **Wireless Repeater**, you are required to enter the MAC address of the Access Point. If you do not know the MAC address of the Access Point, click on the **Site Survey** button to view and select one from the list.  
**Note:** In order for the Wireless Repeater mode to function properly, make sure that the other Repeaters also use an Atheros chip set.
- **2.4 GHz Radio:** select **Disable** or **Enable** for the 2.4GHz radio.
- Select a radio button for the type of device you would like this to be. Options available are: **Access Point**, **Wireless Client**, and **Wireless Repeater**. If you select **Access Point**, you are not required to enter any additional information. If

you select **Wireless Client**, you are required to enter the MAC address of the remote Access Point. If you select **Wireless Repeater**, you are required to enter the MAC address of the Access Point. If you do not know the MAC address of the Access Point, click on the **Site Survey** button to view and select one from the list.

**Note:** In order for the Wireless Repeater mode to function properly, make sure that the other Repeaters also use an Atheros chip set.

- Click on the **Apply** button to confirm and save the changes.

## 4.5.2 802.11a




- Click on the **802.11a** link on the navigation bar. On this page you can configure the 802.11a settings.

### 5GHz Radio Settings

SSID	<input type="text" value="Wireless Network"/>
Suppress SSID	<input type="checkbox"/>
Wireless Mode	5GHz 54Mbps (802.11a) ▼
Radio Frequency	SmartSelect ▼
Security	<input type="checkbox"/> WPA-Only <span style="float: right; border: 1px solid gray; padding: 2px 5px;">Edit Security Setting</span>

### Advanced Settings

Data Rate	best ▼
Transmit Power	Full ▼
Antenna Diversity	Best ▼
Beacon Interval (20 - 1000)	<input type="text" value="100"/>
Data Beacon Rate (DTIM) (1 - 16384)	<input type="text" value="1"/>
Fragment Length (256 - 2346)	<input type="text" value="2346"/>
RTS/CTS Threshold (256 - 2346)	<input type="text" value="2346"/>

- **SSID:** enter the SSID of the wireless network. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.



- **Suppress SSID:** place a check in this box if you would like the SSID to be hidden from other Access Points or a site survey.
- **Wireless Mode:** select a data rate from the drop-down menu. One option is **54Mbps (802.11a)** and the other is **108Mbps (802.11a Turbo)**.  
**Note:** If you decide to select **802.11a Turbo** then you may not select **802.11g (Super G)**.
- **Radio Frequency:** select a radio frequency from the drop-down list. **SmartSelect** is the default setting.
- **Security:** place a check in this box if you would like to use **WPA** only. If you would like to configure a more detailed security, click on the **Edit Security Setting** button. This option is described in the next section.
- **Data Rate:** select a data rate from the drop-down list; by default **Best** is selected.
- **Transmit Power:** select a transmit power from the drop-down list; by default **full** is selected.
- **Antenna Diversity:** select **Best, 1** or **2** from the drop-down list.
- **Beacon Interval (20-1000):** enter a value between 20 and 1000 for the beacon interval. Beacons announce the existence for the 802.11 networks at regular intervals.
- **Data Beacon Rate DTIM (1-16384):** enter the data beacon rate, the default rate is 1.
- **Fragment Length (256-2346):** enter a value between 256 and 2346 for the fragment length.
- **RTS/CTS Threshold (256-2346):** enter a value between 256 and 2346 for the RTS/CTS threshold. Any packet in the RTS/CTS handshake larger than the specified size will be discarded.
- Click on the **Apply** button to confirm and save the changes.

### 4.5.2.1 Security Setting

#### 5GHz Security

Security Mode	<input checked="" type="radio"/> Disabled <input type="radio"/> Pre-shared Key <input type="radio"/> Dynamic
Security Server	<input type="button" value="Edit Security Server Settings"/>

	Key Entry Method	<input checked="" type="radio"/> Hexadecimal <input type="radio"/> Ascii Text
<b>Default Shared Key</b>	<b>Encryption Key</b>	<b>Key Length</b>
<input type="radio"/> 1.	<input type="text"/>	None <input type="button" value="v"/>
<input type="radio"/> 2.	<input type="text"/>	None <input type="button" value="v"/>
<input type="radio"/> 3.	<input type="text"/>	None <input type="button" value="v"/>
<input type="radio"/> 4.	<input type="text"/>	<div style="border: 1px solid black; padding: 2px;">           None            64 bit (10 hex digits/ 5 ascii keys)            128 bit (26 hex digits/13 ascii keys)            152 bit (32 hex digits/16 ascii keys)         </div>


Access Control List:	<input type="button" value="Disable"/> <input type="button" value="v"/>	<input type="button" value="Edit ACL Settings"/>
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- **Security Mode:** select a security mode; options available are **Disabled**, **Pre-shared Key**, or **Dynamic**.
- **Key Entry Method:** select a type of key method; options available are **Hexadecimal** or **Ascii Text**.
- **Default Shared Key:** select a default-shared key, and then enter the key in the **Encryption Key** text box. From the **Key Length** drop down list, select **none**, **64-bit**, **128-bit** or **152-bit**.
- **Access Control List:** select Enable or Disable for MAC access control lists. Then click on the **Edit ACL Settings** button.

### 4.5.2.2 Security Server Settings

#### RADIUS Server

Domain Name Server IP Address	<input style="width: 100%;" type="text"/>
Domain Name Server	<input style="width: 100%;" type="text"/>
RADIUS Server	<input style="width: 100%;" type="text"/>
RADIUS Port	<input style="width: 100%;" type="text" value="1812"/>
RADIUS Secret	<input style="width: 100%;" type="text"/>
5GHz Key Source	Local <input checked="" type="checkbox"/> Remote <input type="checkbox"/>










- **Domain Name Server IP address:** enter the IP address of the domain name server.
- **Domain Name Server:** enter the name of the domain name server.
- **RADIUS Server:** enter the IP address of the RADIUS server.
- **RADIUS Port:** enter the port of the RADIUS server.
- **RADIUS Secret:** enter the password of the RADIUS server.
- **5GHz Key Source:** select a location of the RADIUS key. **Local** specifies that the RADIUS key is located in the AP. **Remote** specifies that the RADIUS key is located in the RADIUS server.
- Click on the **Apply** button to confirm and save the changes.

### 4.5.2.3 ACL Settings

#### 5GHz ACL

MAC Address	ACL Type










- To delete an existing MAC ACL, click on the **Delete** button.
- Click on the **Add** button to add another MAC ACL.

#### 4.5.2.4 Add New ACL

### 5GHz New ACL

MAC Address	<input type="text" value="55:66:77:88:99:11"/> <small>(MAC Address format: aa:bb:cc:dd:ee:ff)</small>
ACL Type	<input type="text" value="Allow"/>
Unique Key	<input type="text"/> <small>(If unique key is used in ACL type)</small>

- **MAC Address:** enter the MAC address.
- **ACL Type:** select an ACL type from the drop-down list. Options available are **Allow, Deny, Default Shared Key, 64-bit, 128-bit** or **152-bit**.
- **Unique Key:** this is only required if a unique key is used in the ACL type.
- Click on the **Apply** button to confirm and save the changes.

### 4.5.3 802.11g

- Click on the **802.11g** link on the navigation bar. On this page you can configure the 802.11g settings.

#### 2.4GHz Radio Settings

SSID	<input type="text" value="Wireless Network"/>
Suppress SSID	<input type="checkbox"/>
Wireless Mode	2.4GHz 54Mbps (802.11g) ▾
Radio Frequency	SmartSelect ▾
Security	<input type="checkbox"/> WPA-Only <input type="button" value="Edit Security Setting"/>

#### Advanced Settings

Data Rate	best ▾
Transmit Power	Full ▾
Antenna Diversity	Best ▾
Beacon Interval (20 - 1000)	<input type="text" value="100"/>
Data Beacon Rate (DTIM) (1 - 16384)	<input type="text" value="1"/>
Fragment Length (256 - 2346)	<input type="text" value="2346"/>
RTS/CTS Threshold (256 - 2346)	<input type="text" value="2346"/>
Short Preamble	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Allow 2.4GHz 54Mbps Stations Only	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Protection Mode	Auto ▾
Protection Rate	11 Mbps ▾
Protection Type	<input checked="" type="radio"/> CTS-only <input type="radio"/> RTS-CTS
Short Slot Time	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

- **SSID:** enter the SSID of the wireless network. The SSID is a unique name shared among all points in your wireless network. The SSID must be identical for all points in the network, and is case-sensitive.
- **Suppress SSID:** place a check in this box if you would like the SSID to be hidden from other Access Points or a site survey.
- **Wireless Mode:** select a data rate from the drop-down menu. The options

available are **11Mbps (802.11b)**, **54Mbps (802.11g)**, and **108Mbps (Super G)**.

**Note:** If you decide to select **802.11g (Super G)** then you may not select **802.11a Turbo**.

- **Radio Frequency:** select a radio frequency from the drop-down list. **SmartSelect** is the default setting.
- **Security:** place a check in this box if you would like to use **WPA** only. If you would like to configure a more detailed security, click on the **Edit Security Setting** button. This option is described in the next section.
- **Data Rate:** select a data rate from the drop-down list; by default **Best** is selected.
- **Transmit Power:** select a transmit power from the drop-down list; by default **full** is selected.
- **Antenna Diversity:** select **Best**, **1** or **2** from the drop-down list.
- **Beacon Interval (20-1000):** enter a value between 20 and 1000 for the beacon interval. Beacons announce the existence for the 802.11 networks at regular intervals.
- **Data Beacon Rate DTIM (1-16384):** enter the data beacon rate; the default rate is 1.
- **Fragment Length (256-2346):** enter a value between 256 and 2346 for the fragment length.
- **RTS/CTS Threshold (256-2346):** enter a value between 256 and 2346 for the RTS/CTS threshold. Any packet in the RTS/CTS handshake larger than the specified size will be discarded.
- **Short Preamble:** use this radio button to specify short preamble usage. When **Enable** is selected, both short and long preambles are used. When **Disable** is selected only long preambles are used.
- **Allow 2.4GHz 54Mbps Stations Only:** use this radio button to Enable or Disable the association of 2.4GHz Mbps station only.
- **Protection Mode:** select a protection mode from the drop-down list for the CTS operation mode. By default, **auto** is selected.
- **Protection Rate:** select a protection rate from the drop-down list for the CTS operation. By default, **11Mbps** is selected.
- **Protection Type:** Select a **CTS-only** or **RTS-CTS** radio button. By default, **CTS-only** is selected.
- **Short Slot Time:** use this radio button to **Enable** or **Disable** short slot time usage.
- Click on the **Apply** button to confirm and save the changes.

### 4.5.3.1 Security Setting

#### 2.4GHz Security


Security Mode	<input checked="" type="radio"/> Disabled <input type="radio"/> Pre-shared Key <input type="radio"/> Dynamic															
Security Server	<input type="button" value="Edit Security Server Settings"/>															
Key Entry Method	<input checked="" type="radio"/> Hexadecimal <input type="radio"/> Ascii Text															
<b>Default Shared Key</b>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f2f2f2;"> <th style="width: 10%;"></th> <th style="width: 40%;">Encryption Key</th> <th style="width: 50%;">Key Length</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><input type="radio"/> 1.</td> <td style="border: 1px solid #ccc; height: 20px;"></td> <td style="border: 1px solid #ccc;">None <span style="float: right;">▼</span></td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> 2.</td> <td style="border: 1px solid #ccc; height: 20px;"></td> <td style="border: 1px solid #ccc;">None <span style="float: right;">▼</span></td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> 3.</td> <td style="border: 1px solid #ccc; height: 20px;"></td> <td style="border: 1px solid #ccc;">None <span style="float: right;">▼</span></td> </tr> <tr> <td style="text-align: center;"><input type="radio"/> 4.</td> <td style="border: 1px solid #ccc; height: 20px;"></td> <td style="border: 1px solid #ccc;"> <div style="border: 1px solid #ccc; padding: 2px;">           None            64 bit (10 hex digits/5 ascii keys)            128 bit (26 hex digits/13 ascii keys)            152 bit (32 hex digits/16 ascii keys)         </div> </td> </tr> </tbody> </table>		Encryption Key	Key Length	<input type="radio"/> 1.		None <span style="float: right;">▼</span>	<input type="radio"/> 2.		None <span style="float: right;">▼</span>	<input type="radio"/> 3.		None <span style="float: right;">▼</span>	<input type="radio"/> 4.		<div style="border: 1px solid #ccc; padding: 2px;">           None            64 bit (10 hex digits/5 ascii keys)            128 bit (26 hex digits/13 ascii keys)            152 bit (32 hex digits/16 ascii keys)         </div>
	Encryption Key	Key Length														
<input type="radio"/> 1.		None <span style="float: right;">▼</span>														
<input type="radio"/> 2.		None <span style="float: right;">▼</span>														
<input type="radio"/> 3.		None <span style="float: right;">▼</span>														
<input type="radio"/> 4.		<div style="border: 1px solid #ccc; padding: 2px;">           None            64 bit (10 hex digits/5 ascii keys)            128 bit (26 hex digits/13 ascii keys)            152 bit (32 hex digits/16 ascii keys)         </div>														
Access Control List:	<input type="button" value="Disable"/> <span style="margin-left: 20px;">▼</span> <input type="button" value="Edit ACL Settings"/>															




- **Security Mode:** select a security mode; options available are **Disabled**, **Pre-shared Key**, or **Dynamic**.
- **Key Entry Method:** select a type of key method; options available are **Hexadecimal** or **Ascii Text**.
- **Default Shared Key:** select a default-shared key, and then enter the key in the **Encryption Key** text box. From the **Key Length** drop down list, select **none**, **64-bit**, **128-bit** or **152-bit**.
- **Access Control List:** select Enable or Disable for MAC access control lists. Then click on the **Edit ACL Settings** button.

### 4.5.3.2 Security Server Settings

#### RADIUS Server

Domain Name Server IP Address	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
Domain Name Server	<input type="text"/>
RADIUS Server	<input type="text"/>
RADIUS Port	<input type="text" value="1812"/>
RADIUS Secret	<input type="text"/>
2.4GHz Key Source	Local <input checked="" type="checkbox"/> Remote <input type="checkbox"/>










- **Domain Name Server IP address:** enter the IP address of the domain name server.
- **Domain Name Server:** enter the name of the domain name server.
- **RADIUS Server:** enter the IP address of the RADIUS server.
- **RADIUS Port:** enter the port of the RADIUS server.
- **RADIUS Secret:** enter the password of the RADIUS server.
- **2.4GHz Key Source:** select a location of the RADIUS key. **Local** specifies that the RADIUS key is located in the AP. **Remote** specifies that the RADIUS key is located in the RADIUS server.
- Click on the **Apply** button to confirm and save the changes.

### 4.5.3.3 ACL Settings

#### 2.4GHz ACL

MAC Address	ACL Type	




- To delete an existing MAC ACL, click on the **Delete** button.
- Click on the **Add** button to add another MAC ACL.






### 4.5.3.4 Add New ACL

#### 2.4GHz New ACL

MAC Address	<input style="width: 90%;" type="text" value="33:44:55:66:77:88"/> <small>(MAC Address format: aa:bb:cc:dd:ee:ff)</small>
ACL Type	<input style="width: 90%;" type="text" value="Deny"/>
Unique Key	<input style="width: 90%;" type="text"/> <small>(If unique key is used in ACL type)</small>



- **MAC Address:** enter the MAC address.
- **ACL Type:** select an ACL type from the drop-down list. Options available are **Allow, Deny, Default Shared Key, 64-bit, 128-bit** or **152-bit**.
- **Unique Key:** this is only required if a unique key is used in the ACL type.
- Click on the **Apply** button to confirm and save the changes.

## 4.6 Statistics

- Click on the **Statistics** link on the navigation bar, you will then see two options: 5GHz Statistics and 2.4GHz Statistics. Each one is described in detail below.

### 4.6.1 5 GHz Statistics

- Click on the **5GHz Statistics** link on the navigation bar. You will then see a list of stations that are currently part of the BSS.

#### 5GHz Statistics

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

ID	MAC Address	State
AP	00:02:6F:BE:F0:F5	up

- Click on the MAC address to view detailed statistics.

5GHz BSS Stats						
5GHz AP is up						
Wireless Mode: 5GHz 54Mbps (802.11a)						
Authentication Type		Encryption		Cipher Advertised		
Open System		no		None		
Authentication	Deauthentication	Association	Disassociation	Reassociation		
0	0	0	0	0		
	MSDU	Data	Multicast	Management	Control	Errors
Receive	0	0	0	0	0	16551
Transmit	343	325	343	18	0	0
Receive Errors	Discarded Frames	Duplicate Frames	CRC Errors	Decrypt Errors	PHY Errors	DMA Errors
16551	0	0	0	0	16551	0
Transmit Errors	Discarded Frames		Excessive Retries	DMA Errors		
0	2		0	0		

#### 4.6.2 2.4 GHz Statistics

- Click on the **2.4GHz Statistics** link on the navigation bar. You will then see a list of stations that are currently part of the BSS.

2.4GHz Statistics		
This shows the Access Point and the stations that are currently part of the BSS.		
ID	MAC Address	State
AP	00:02:6F:BE:F0:F6	up

- Click on the MAC address to view detailed statistics.

<b>2.4GHz BSS Stats</b>						
<b>2.4GHz AP is up</b>						
<b>Wireless Mode: 2.4GHz 54Mbps (802.11g)</b>						
<b>Authentication Type</b>			<b>Encryption</b>	<b>Cipher Advertised</b>		
Open System			no	None		
<b>Authentication</b>	<b>Deauthentication</b>	<b>Association</b>	<b>Disassociation</b>	<b>Reassociation</b>		
7	9	7	3	0		
	<b>MSDU</b>	<b>Data</b>	<b>Multicast</b>	<b>Management</b>	<b>Control</b>	<b>Errors</b>
<b>Receive</b>	817603	292	99	817311	0	3058529
<b>Transmit</b>	12501	318	329	19700	0	7523
<b>Receive Errors</b>	<b>Discarded Frames</b>	<b>Duplicate Frames</b>	<b>CRC Errors</b>	<b>Decrypt Errors</b>	<b>PHY Errors</b>	<b>DMA Errors</b>
3058529	10	10	223954	0	2834575	0
<b>Transmit Errors</b>	<b>Discarded Frames</b>		<b>Excessive Retries</b>		<b>DMA Errors</b>	
7523	7518		7523		0	




## Appendix A – Country Selection

### Wireless – General [Country Select]

- Click on the **General** link on the navigation bar. On this page you can select and set the country for the Access Point, and choose to enable or disable the 5GHz and 2.4GHz radios.

#### Wireless General Settings

Country Code	UNITED STATES - US
5GHz Radio	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
2.4GHz Radio	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

- **Country Code:** select your country from the drop-down list.
- **5 GHz Radio:** select **Disable** or **Enable** for the 5GHz radio.
- **2.4 GHz Radio:** select **Disable** or **Enable** for the 2.4GHz radio.
- Click on the **Apply** button to confirm and save the changes.

## Appendix B – Specifications

General	
Data Rates (Auto-rate capable)	802.11a : 6, 9, 12, 18, 24, 36, 48, 54 & 108Mbps(Turbo Mode) 802.11g :6, 9, 12, 18, 24, 36, 48 & 54Mbps 802.11b :1, 2, 5.5, 11Mbps
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Standards	IEEE802.11, IEEE802.11a, IEEE802.11b, IEEE802.11g draft, IEEE802.11d, IEEE802.11h, IEEE802.3, IEEE802.3u Standards
Power Requirements	Power Supply: 90 to 240 VDC +/- 10%(depend on different country) Device: 12 V 1A Power over Ethernet (PoE): -48V (Optional)
Compliance	FCC Part 15/UL, ETSI 300/328/CE
Security	WEP (64, 128, 152bit) Wi-Fi Protected Access(64,128,152-WEP with TKIP, Shared Key Authentication)
Management	Web-based configuration (HTTP), Telnet
Firmware Upgrade	Upgrade firmware via TFTP/Web browser

RF Information	
Frequency Band	802.11a <ul style="list-style-type: none"> <li>• 5.15~5.25GHz, 5.25~5.35GHz, 5.725~5.825GHz</li> </ul> 802.11b/g <ul style="list-style-type: none"> <li>• 2.412~2.462GHz(US)</li> <li>• 2.412~2.484GHz(Japan)</li> <li>• 2.412~2.472GHz(Europe ETSI)</li> <li>• 2.457~2.462GHz(Spain)</li> <li>• 2.457~2.472GHz(France)</li> </ul>
Modulation Technology	802.11a/g : OFDM (64-QAM, 16-QAM, QPSK, BPSK) 802.11b : DSSS (DBPK, DQPSK, CCK)
Operating Channels	802.11a : 12 for FCC, 11 for Europe, 4 for Japan, 4 for Singapore, 4 for Taiwan 802.11b/g : 11 for FCC, 14 for Japan, 13 for Europe, 2 for Spain, 4 for France
Receive Sensitivity (typical)	802.11a : -82dBm @ 6Mbps   -78dBm @ 18Mbps   -70dBm @ 48Mbps -81dBm @ 9Mbps   -75dBm @ 24Mbps   -68dBm @ 54Mbps -79dBm @ 12Mbps   -72dBm @ 36Mbps 802.11b/g : -91dBm @ 1Mbps   -84dBm @ 6Mbps   -75dBm @ 24Mbps -90dBm @ 2Mbps   -82dBm @ 9Mbps   -73dBm @ 36Mbps

	-89dBm @ 5.5Mbps -79dBm @ 12Mbps -70dBm @ 48Mbps -87dBm @ 11Mbps -77dBm @ 18Mbps -68dBm @ 54Mbps
Transmit Output Power (Typical)	802.11a : Up to 20dBm 802.11g : Up to 21dBm 802.11b : Up to 23dBm

<b>Physical</b>	
Interface	1* 10/100Base Ethernet LAN Port
Status LEDs	Power, LAN, WLAN 11a, WLAN 11b/g
Antenna	Non-detachable diversity antenna*2 (2.4G/5G)
Weight	500 g
Dimensions	220(L)mm x 145(W)mm x 35(H)mm

<b>Environmental</b>	
Temperature Range	0°C to 55°C (32°F to 131°F) - Operating -40°C to 70°C (-40°F to 158°F) - Storage
Humidity (non-condensing)	5%~95% Typical

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## Appendix C – FCC Interference Statement

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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: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

For operation within 5.15 ~ 5.25GHz frequency range, it is restricted to indoor environment, and the antenna of this device must be integral.

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 device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

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