802.11ac Dual Band In Ceiling WAP (P/N：DA1104)

Owner’s Manual

P/N 1308237 Rev. A

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules and RSS-210 Issue 8 of Canada. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the Federal Communications Commission (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 or more 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.

Reprinted from the Code of Federal Regulations #47, part 15.193, 1993. Washington DC: Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office.

Canadian Department of Communications

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Le manuel d'utilisation des appareils radio exempts de licence doit contenir l'énoncé qui suit, ou l'équivalent, à un endroit bien en vue et/ou sur les appareils :

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC Radio Frequency Exposure Caution Statement

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations. Any changes of modifications not expressly approved by the grantee of this device could void the users authority to operate the equipment. Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user’s authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution or attachment of connecting

cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

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

Declaration of Conformity (R&TTE directive 1999/5/EC)

- The following items were completed and are considered relevant and sufficient:
- Essential requirements as in [Article 3]
- Protection requirements for health and safety as in [Article 3.1a]
- Testing for electric safety according to [EN 60950]
- Protection requirements for electromagnetic compatibility in [Article 3.1b]
- Testing for electromagnetic compatibility in [EN 301 489-1] & [EN 301]
- Testing according to [489-17]
- Effective use of the radio spectrum as in [Article 3.2]
- Testing for radio test suites according to [EN 300 328-2]

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. THE UNIT MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING WATER.

CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION: THIS DEVICE MUST BE INSTALLED AND USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AS DESCRIBED IN THE USER DOCUMENTATION THAT COMES WITH THE PRODUCT.

WARNING: POSTPONE INSTALLATION UNTIL THERE IS NO RISK OF THUNDERSTORM OR LIGHTNING ACTIVITY IN THE AREA.

When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Read all of the instructions {listed here and/or in the user manual} before you operate this equipment.
- Give particular attention to all safety precautions.
- Retain the instructions for future reference.
- Comply with all warning and caution statements in the instructions.
- Observe all warning and caution symbols that are affixed to this equipment.
- Comply with all instructions that accompany this equipment.
- Avoid using this product during an electrical storm. There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug the power supply, and disconnect the Cat 5e to the DA1104 at the POE Inserter. This will prevent damage to the product due to lightning and power surges. It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the equipment by local lightning strikes and other electrical surges.

- Operate this product only from the type of power source indicated on the product's marking label.

- If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

Installation of this product must be in accordance with national wiring codes and conform to local regulations.

Place POE Inserter to allow for easy access when disconnecting the power cord/adapter of the device from the AC wall outlet.

Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.

When not utilizing the recommended 3-gang plastic switch & outlet box, do not directly cover the device, or block the airflow to the device with insulation or any other objects.

Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

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Chapter 1. Product Introduction

1.1 Package Contents

The contents of your product package should include the following items:

- DA1104: 802.11ac Wireless Access Point
- POE Module with AC adapter
- Installation Bracket
- Round Cover
- Installation/Instruction Sheet

1.2 Product Description

Ultra high speed and enhanced coverage

The DA1104 provides dual-band (2.4GHz 802.11b/g/n + 5GHz 802.11ac) wireless access capability, utilizing 4 built-in high sensitivity antennas. It is compliant with IEEE 802.3af/at PoE power scheme for easy deployment and can be mounted to the ceiling or wall to entirely cover large rooms.

Ultra High Speed 802.11n Wireless

The DA1104 supports IEEE 802.11a/b/g/n/ac dual band standards with 2T2R MIMO technology, providing wireless speed up to 300+866Mbps, which is 22X faster than traditional 11g Access Points. Moreover, the DA1104 is equipped with a Gigabit Ethernet Port for faster transmitting speed for network applications and less interference to enhance data throughput. The incredible wireless speed makes it ideal for handling multiple HD movies streams, high resolution on-line gaming, stereo music, VoIP and data streams at the same time in a stable and smooth fashion.

Full Support of Wireless Security Encryption

Besides 64/128-bit WEP encryption, the DA1104 integrates WPA / WPA2, WPA-PSK / WPA2-PSK and 802.1x Radius authority to secure and protect your wireless LAN. It provides wireless MAC filtering and SSID broadcast control to consolidate wireless network security and prevent unauthorized wireless connections.

Flexible Deployment with PoE Feature

Compliant with IEEE 802.3at Power over Ethernet standard, the DA1104 can be powered and networked by a single UTP cable. It thus reduces the needs of extra cables and dedicated electrical outlets on the wall, ceiling or other places that are difficult to reach.

Product Features

- **Standard Compliant Hardware Interface**
  - Complies with IEEE 802.11ac and IEEE 802.11a/b/g/n standards
  - 1 x 10/100/1000BASE-T Ports with 1-port PoE (powered device)
  - Standard IEEE 802.3af/at Power over Ethernet design
- **RF Interface Characteristics**
  - 2.4GHz (802.11b/g/n) & 5GHz (802.11ac) Dual Band concurrent, which is more efficiently carries high load traffic.
  - 2T2R MIMO technology for enhanced throughput and coverage
  - Provides multiple adjustable transmit power control
  - High Speed (300Mbps for 2.4GHz + 867Mbps for 5GHz) wireless data rate
- **Secure Network Connection**
  - Advanced security: 64/128-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES encryption) and Radius Authentication
  - Supports MAC address filtering

1.3 Product Specifications

Product	**DA1104** 802.11ac Dual Band In Ceiling WAP	
Hardware Specification		
Interface	LAN	1 x 10/100/1000BASE-T RJ45 port Autonegotiation and Auto MDI/MDI-X
Antennas	Gain:	5GHz: 4dBi 2.4GH: 2.5dBi
	Orientation:	Horizontal and Vertical
LED Indicators	PWR, Ethernet, WLAN Allow LED turn off via software control	
Material	Plastic	
Dimension(Φ x H)	205 x 45mm	
Weight	250 ± 10g	
Power Requirement	802.3at PoE, 48V DC input	
Power Consumption	25W (max.)	
Mounting	In-Ceiling	
Wireless interface Specification		
Standard	IEEE 802.11a/n/ac 5GHz IEEE 802.11b/g/n 2.4GHz	
Frequency Band	2.4G: 2.412~2.462GHz 5G: 5.180~5.240GHz, 5.725~5.850GHz	
Extend Frequency	DSSS	
Modulation Type	802.11b: DSSS(DBPSK/ DQPSK/ CCK) 802.11a/g/n: OFDM(BPSK/ QPSK/ 16QAM/ 64QAM) 802.11ac: OFDM(BPSK/ QPSK/ 16QAM/ 64QAM/ 256QAM)	
Data Transmission Rates	802.11ac (VHT20, Nss2-MCS8): Up to 173.3Mbps 802.11ac (VHT40, Nss2-MCS9): Up to 400Mbps 802.11ac (VHT80, Nss2-MCS9): Up to 867Mbps	
	802.11n (HT40): 270/243/216/162/108/81/54/27Mbps 135/121.5/108/81/54/40.5/27/13.5Mbps (dynamic)	
	802.11n (HT20): 130/117/104/78/52/39/26/13Mbps 65/58.5/52/39/26/19.5/13/6.5Mbps (dynamic)	
	802.11g: 54/48/36/24/18/12/9/6Mbps (dynamic)	
	802.11b: 11/5.5/2/1Mbps (dynamic)	
Band Mode	2.4G, 5G concurrent mode	
Transmission Distance	802.11ac: up to 30m 802.11n: up to 70m 802.11g: up to 30m **The estimated transmission distance is a theoretical calculation, the actual distance will vary in different environments.**	

Operating Channels	**2.4GHz** America/ FCC: 1~11 (11 Channels) **5GHz** America/FCC: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 149, 153, 157, 161 (16 Channels)
Channel Width	802.11n: 20/40MHz 802.11ac: 20/40/80MHz
Max. RF Power	**5GHz:** 802.11a: 20 ±2dBm 802.11n (HT20): 20 ±2dBm 802.11n (HT40): 20 ±2dBm 802.11ac (VHT20): 20 ±2dBm 802.11ac (VHT40): 20 ±2dBm 802.11ac (VHT80): 20 ±2dBm
	2.4GHz: 802.11b/g: 22 ±2.5dBm 802.11n: 19 ±2.5dBm
Receive Sensitivity	**5GHz:** 802.11a: -93 @ 6Mbps, -75dBm @ 54Mbps 802.11n (HT20): -92dBm @ MCS0, -71dBm @ MCS7 802.11n (HT40): -89dBm @ MCS0, -66dBm @ MCS15 802.11ac (VHT20): -91dBm @ Nss1-MCS0, -64dBm @ Nss2-MCS8 802.11ac (VHT40): -89dBm @ Nss1-MCS0, -59dBm @ Nss2-MCS9 802.11ac (VHT80): -86dBm @ Nss1-MCS0, -56dBm @ Nss2-MCS9
	2.4GHz: 802.11b (11Mbps): -88dBm @10% PER 802.11g (54Mbps): -74dBm @10% PER 802.11n 20MHz (MCS7): -69dBm @10% PER 802.11n 40MHz (MCS15): -66dBm @10% PER
Transmit Power Adjustment	15%, 35%, 50%, 70%, 100%, 5-level adjustment
Software Features	
Wireless Mode	■ Access Point ■ WDS PTP (Point to Point) ■ Client ■ WDS PTMP (Point to Multipoint) ■ Repeater (WDS+AP) ■ Universal Repeater (AP+Client)
Encryption Security	■ WEP (64/128-bit) encryption security ■ WPA / WPA2 (TKIP/AES) ■ WPA-PSK / WPA2-PSK (TKIP/AES) ■ 802.1x Authentication
Wireless Security	Provides wireless LAN ACL (Access Control List) filtering
	Wireless MAC address filtering up to 20 entries
	Supports WPS (Wi-Fi Protected Setup)

	Enable/Disable SSID Broadcast
Wireless Advanced	WMM (Wi-Fi Multimedia): 802.11e Wireless QoS
	Multiple SSID: up to 5 at 2.4GHz and 5 at 5GHz
	Wireless Isolation: Enable it to isolate each connected wireless clients from communicating with each other
	IAPP (Inter Access Point Protocol): 802.11f Wireless Roaming
	Provides Wireless Statistics
Max. Clients	Wire: 253 2.4GHz Wireless: 32 5GHz Wireless: 32
LAN	Built-in DHCP server supporting static IP address distributing
	Supports UPnP
	Supports IGMP Proxy
System Management	Web-Based (HTTP) management interface
	SNTP time synchronize
	Easy firmware upgrade
	Supports Scheduling Reboot
	Supports Smart Discovery Utility
Standards Conformance	
IEEE Standards	IEEE 802.11ac (2T2R, up to 867Mbps) IEEE 802.11n (2T2R, up to 300Mbps) IEEE 802.11g IEEE 802.11b IEEE 802.11i IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3x Flow Control
Others Protocols and Standards	CSMA/CA, CSMA/CD, TCP/IP, DHCP, ICMP, SNTP
Environment & Certification	
Temperature	Operating: 0 ~ 40 Degree C Storage: -20 ~ 70 Degree C
Humidity	Operating: 10 ~ 90% (Non-Condensing) Storage: 5 ~ 90% (Non-Condensing)
Regulatory	FCC Part 15B & 15C, IC, RoHS

Chapter 2. Hardware Installation

Please follow the instructions below to connect DA1104 to the existing network devices and your computers.

2.1 Product Installation Overview

- **Installation Drawing :**

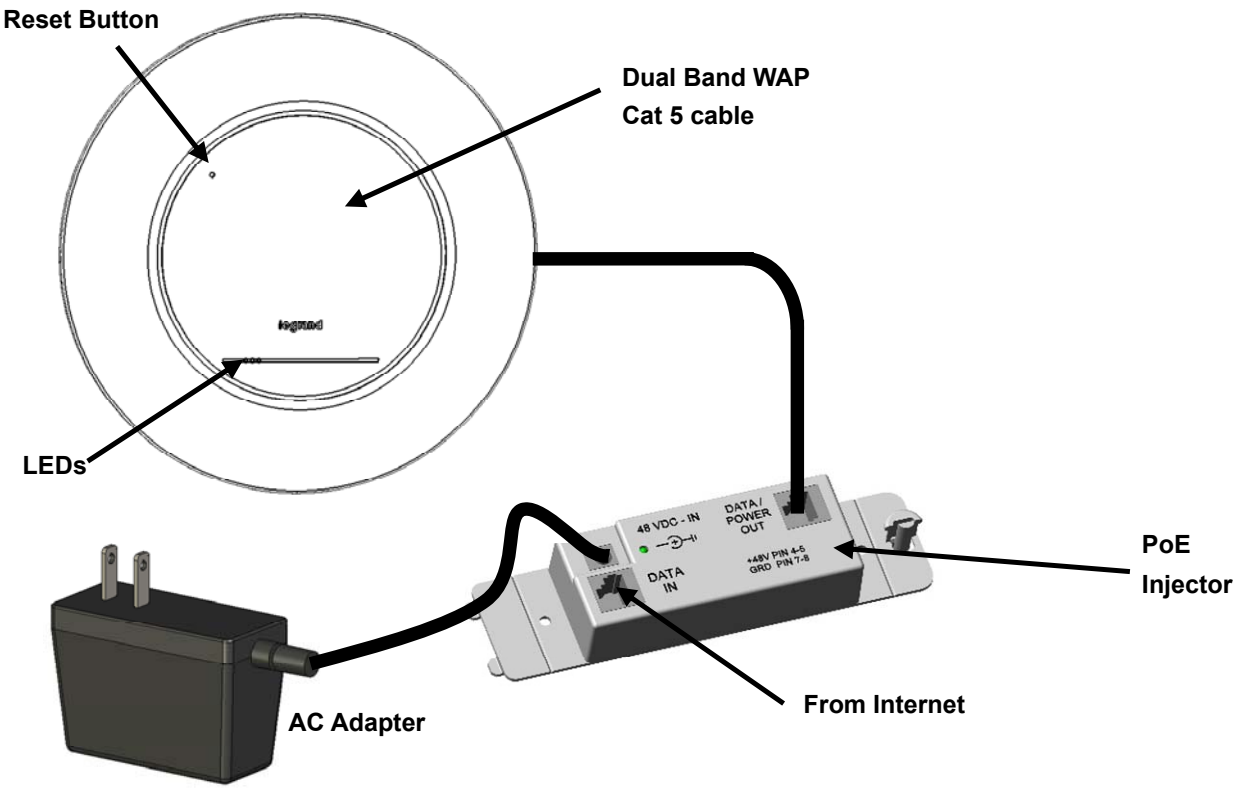


Figure 2-1 DA1104 Product Installation Drawing

2.1.1 Panel Layout

The front and rear panel provide a simple interface monitoring the AP.

LED Interface

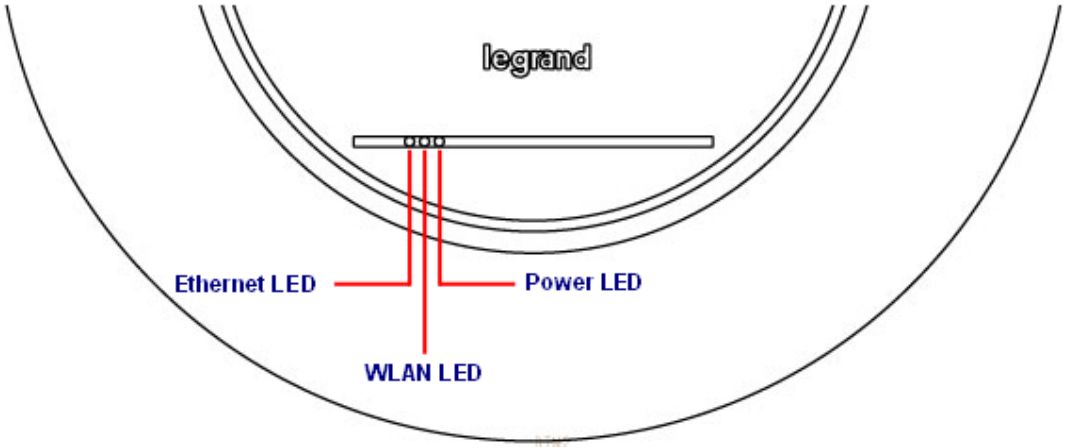


Figure 2-2 DA1104 Panel Layout - LED

Button definition

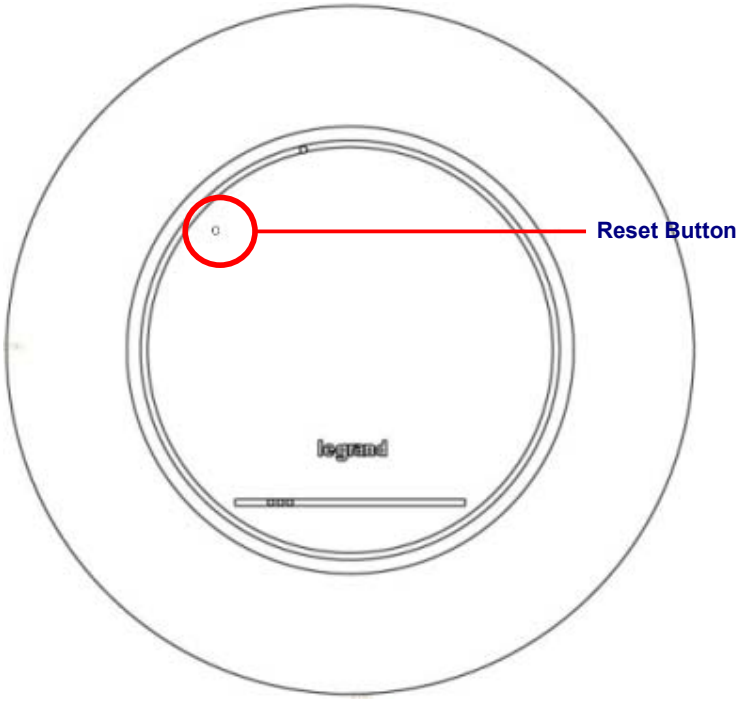


Figure 2-3 DA1104 Panel Layout – Reset Button

2.1.2 Hardware Description

LED definition

LED	COLOR	STATUS	FUNCTION
PWR	Blue	On	Device power on
	Pink	On	Initializing
	Pink	Blinking	Signal Survey
WLAN	Green	On	The 2.4GHz Wi-Fi is activated
	Green	Blinking	The 2.4GHz Wi-Fi is streaming in session
	Orange	On	The 5GHz Wi-Fi is activated
	Orange	Blinking	The 5GHz Wi-Fi is streaming in session
Ethernet	Green	On	Power Present
	Green	Blinking	Ethernet active

Button definition

Object	Description
Reset	Press and hold the Reset button about 10 seconds and then release it. The system restores to the factory default settings.

Port definition

Object	Description
PoE Port (802.3af/at PoE)	10/100/1000Mbps RJ45 port , Auto MDI/ MDI-X Connect PoE port to the IEEE 802.3af/at PoE injector to power on the device.

Chapter 3. Connecting to the AP

3.1 System Requirements

- Broadband Internet Access Service (Cable/xDSL/Ethernet connection)
- One IEEE 802.3af/at PoE switch (supply power to the DA1104)
- PC with a working Ethernet Adapter and an Ethernet cable with RJ45 connectors
- PC running Windows 98/ME, NT4.0, 2000/XP, Windows Vista / Win 7/Win 8, MAC OS 9 or later, Linux, UNIX or other platforms compatible with **TCP/IP** protocols

1. The AP in the following instructions refers to Legrand DA1104.
2. It is recommended to use Internet Explorer 7.0 or above to access the AP.

3.2 Web configuration access

The default IP address of the DA1104 is 192.168.40.253. And the default Subnet Mask is 255.255.255.0. These values can be changed, but in this manual, we use all the default values for examples.

Connect the DA1104 to your PC with an Ethernet cable plugged into the Data In port of the WAP. Power on the DA1104 by plugging in the AC adapter of the PoE Injector.

In the following sections, we'll introduce how to install and configure TCP/IP correctly in **Windows 7** (other operating systems are similar). First, make sure your Ethernet adapter is working, and refer to the Ethernet adapter manual if needed.

3.2.1 Configuring the IP Address Manually

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The Ethernet Adapter of the PC should be configured for an IP address of 192.168.40.xxx (the default IP address of the DA1104 is 192.168.40.253, and the default router address is 192.168.40.254, the "xxx" can be configured to any number from 1 to 252), Subnet Mask is 255.255.255.0.

1 Select **Use the following IP address** radio button, and then configure the IP address of the PC.

2 For example, as the default IP address of the DA1104 is 192.168.40.253 and the router is 192.168.40.254,

you may choose from 192.168.40.1 to 192.168.40.252.

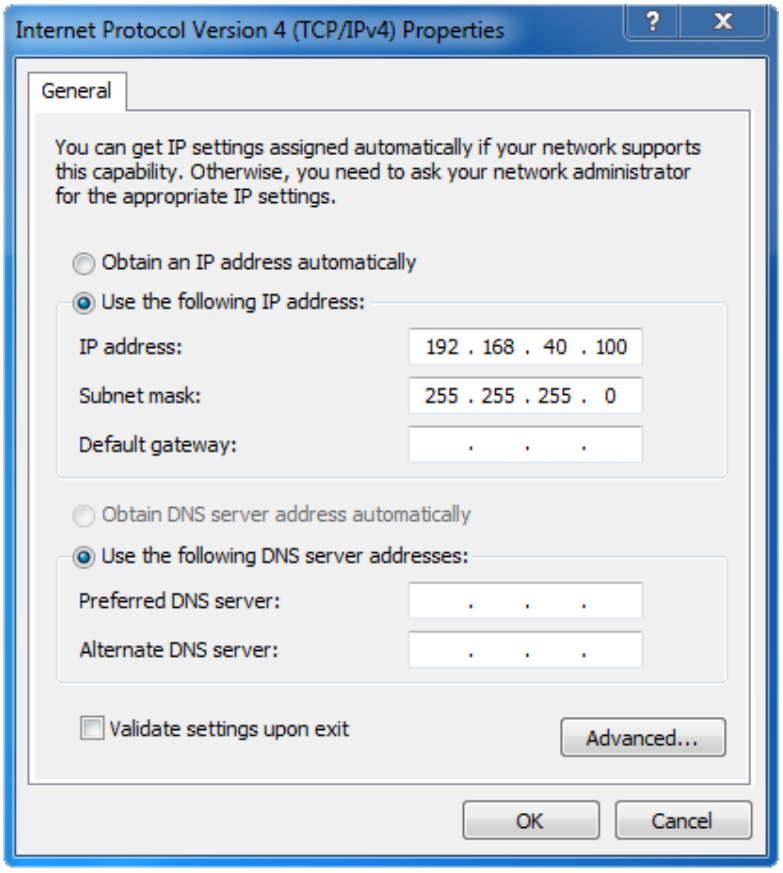


Figure 3-1 TCP/IP Setting

Now click **OK** to save your settings.

Now, you can run the Ping command in the **command prompt** to verify the network connection between your PC and the AP. The following example is in **Windows 7** OS. Please follow the steps below:

1. Click on **Start > Run**.
2. Type "**cmd**" in the Search box.

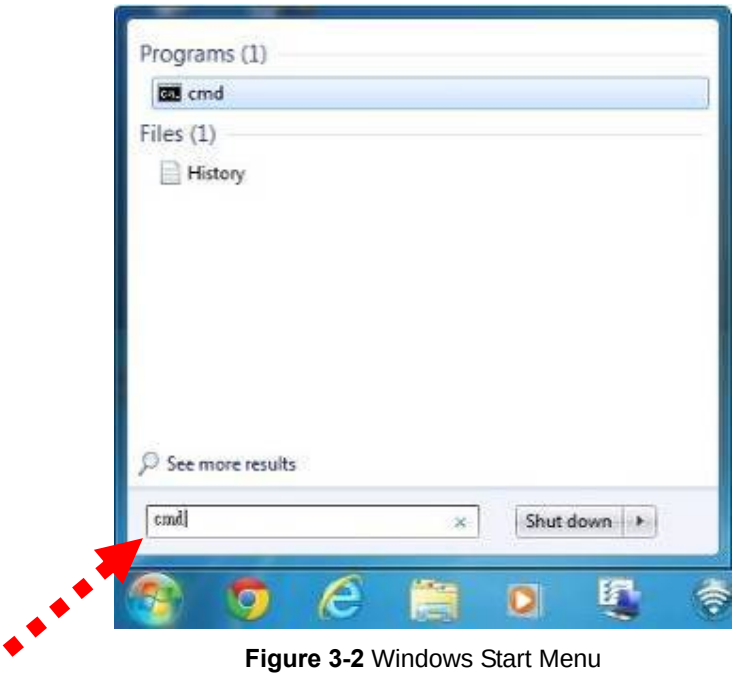


Figure 3-2 Windows Start Menu

3. Open a command prompt, type ping **192.168.40.253** and then press **Enter**.

- If the result displayed is similar to **Figure 3-3**, it means the connection between your PC and the AP has been established well.

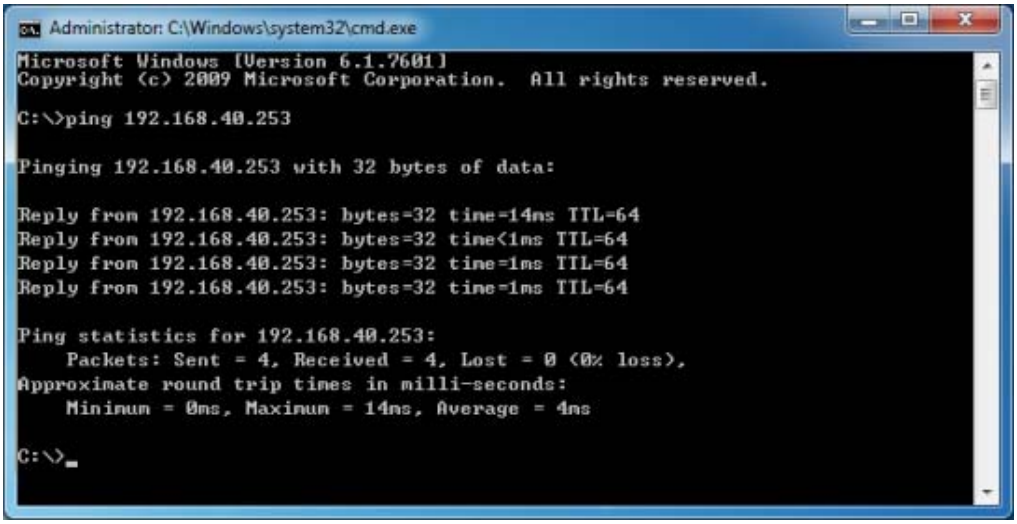


Figure 3-3 Successful result of Ping command

- If the result displayed is similar to **Figure 3-4**, it means the connection between your PC and the AP has failed.

Figure 3-4 Failed Result of Ping Command

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your AP. Some firewall software programs may block a DHCP request on newly installed adapters.

3.2.2 Starting Setup in the Web UI

It is easy to configure and manage the AP with the web browser.

Step 1. To access the configuration utility, open a web-browser and enter the default IP address http://192.168.40.253 in the web address field of the browser.

Figure 3-5 Login by default IP address

After a moment, a login window will appear. Enter **admin** for the User Name and Password, both in lower case letters. Then click the **OK** button or press the **Enter** key.

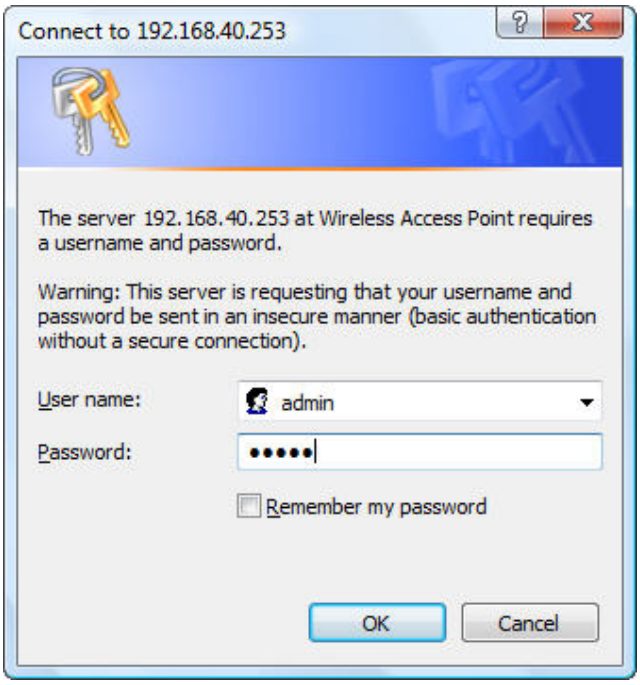


Figure 3-6 Login Window

Default IP Address: **192.168.40.253**

Default User name: **admin**

Default Password: **admin**

Note

If the above screen does not pop up, it may mean that your web-browser has been set to a proxy. Go to Tools menu> Internet Options> Connections> LAN Settings on the screen that appears, cancel the Using Proxy checkbox, and click OK to finish it.

Chapter 4. Configuring the AP

This chapter delivers a detailed presentation of AP's functionalities and features under the main menu below, allowing you to manage the AP with ease.

Figure 4-1 Main Menu

During operation, if you are not clear about a certain feature, you can refer to the "**Help**" section in the right side of the screen to read all related helpful info.

4.1 Setup Wizard

The Setup Wizard will guide the user to configure the DA1104 easily and quickly. Select the Setup Wizard on the left side of the screen and by clicking on Next on the Setup Wizard screen shown below, you will then name your DA1104 and set up its security.

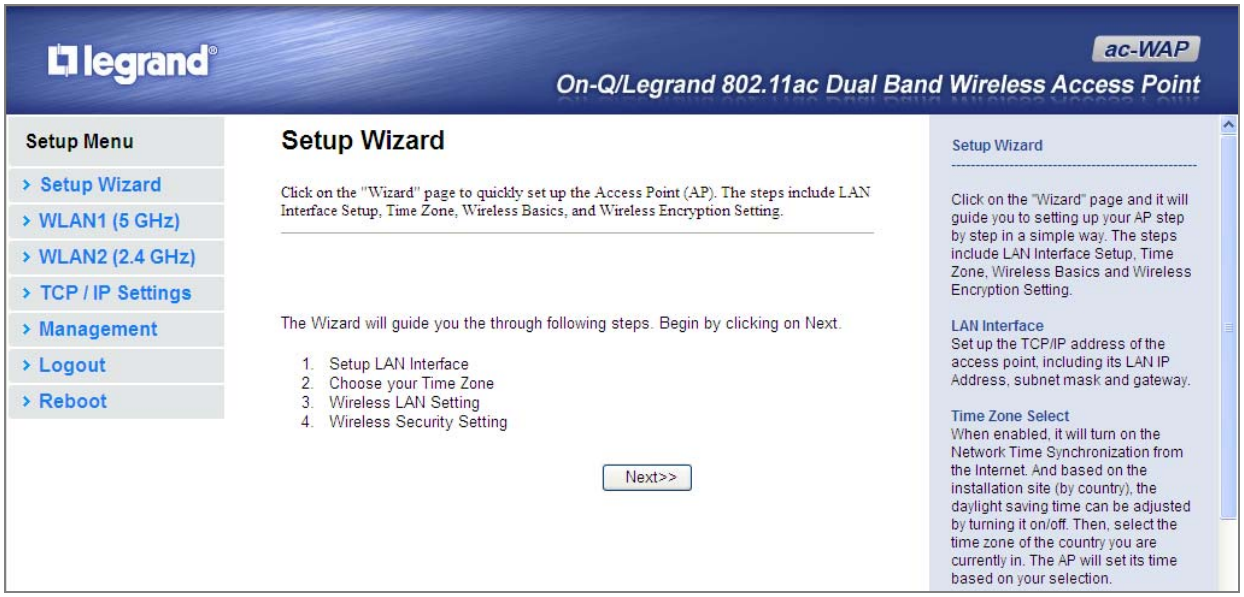


Figure 4-2 Setup Wizard

Step 1: LAN Interface Setup

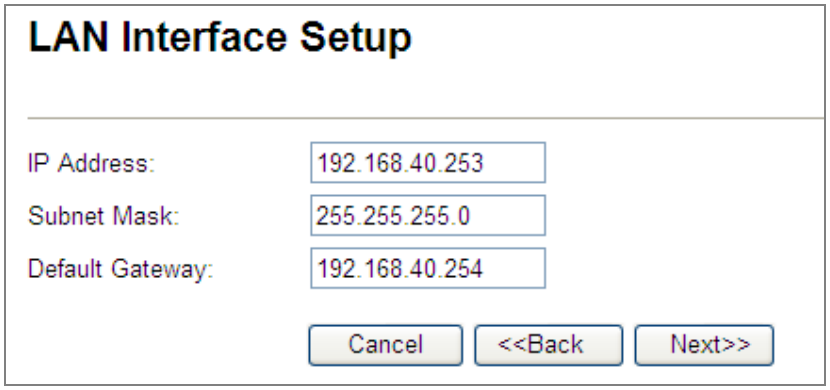


Figure 4-3 Wizard – LAN Interface Setup

The page includes the following fields:

Object	Description
IP Address	Displays the current IP address of the AP. (Default = **192.168.40.253**)
Subnet Mask	Displays LAN mask of the AP. (Default = **255.255.255.0**)
Default Gateway	IP address of the associated router. (Default = **192.168.40.254**)

Step 2: Time Zone Setting

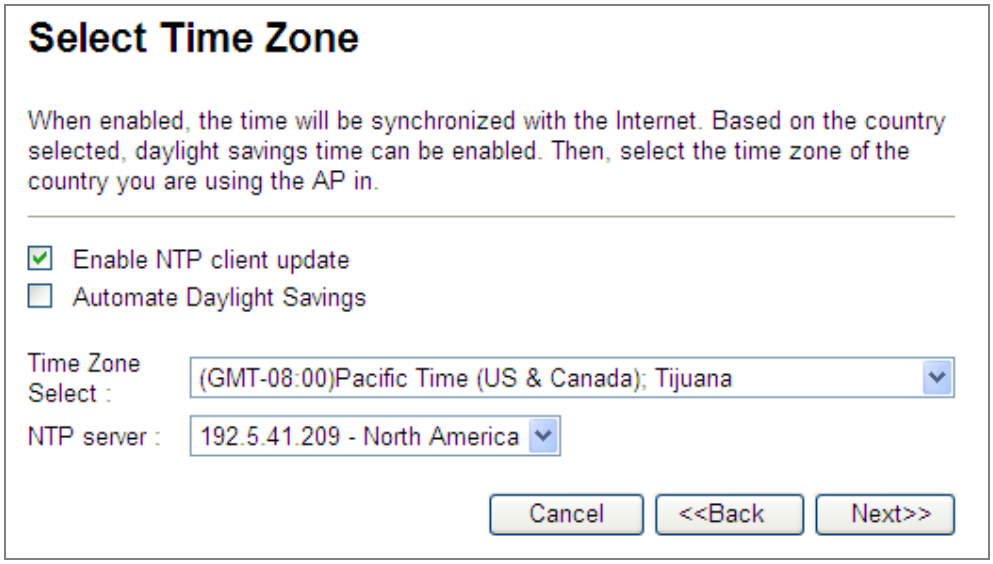


Figure 4-4 Wizard – Time Zone Setup

The page includes the following fields:

Object	Description
Enable NTP client update	Check this box to connect NTP Server and synchronize internet time.
Automatically adjust Daylight Saving	Check this box and system will adjust for daylight savings time automatically.
Time Zone Select	Select the Time Zone from the drop-down menu.
NTP Server	Select the NTP Server from the drop-down menu.
Enable NTP client update	Check this box to connect NTP Server and synchronize internet time.

Step 3: Wireless 5GHz Basic Settings

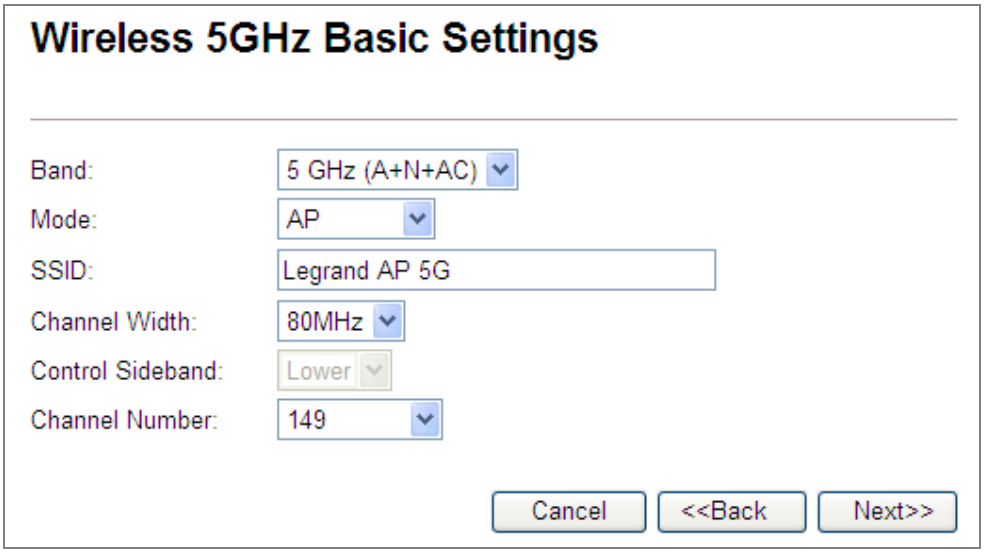


Figure 4-5 Wizard – Wireless 5GHz Basic Settings

The page includes the following fields:

Object	Description
Band	Supports 802.11a, 802.11n, 802.11ac and mixed. Please choose its band according to your clients.
Mode	Supports AP, Client, WDS and AP+WDS mode.
SSID	Service Set Identifier identifies your wireless network.
Channel Width	Select 80MHz if you use 802.11ac; select 40MHz if you use 802.11n; otherwise, 20MHz for the 802.11a mode.
Control Sideband	It is only valid when you choose channel width 40MHz.
Channel Number	Indicates the channel setting for the AP.

Step 4: Wireless 5GHz Security Settings

Secure your wireless network by turning on the WPA or WEP security feature on the router. For this section you can set **WEP** and **WPA-PSK** security mode.

Figure 4-6 Wizard – Wireless 5GHz Security Setup

■ Encryption: WEP

The following picture shows how to set the WEP security.

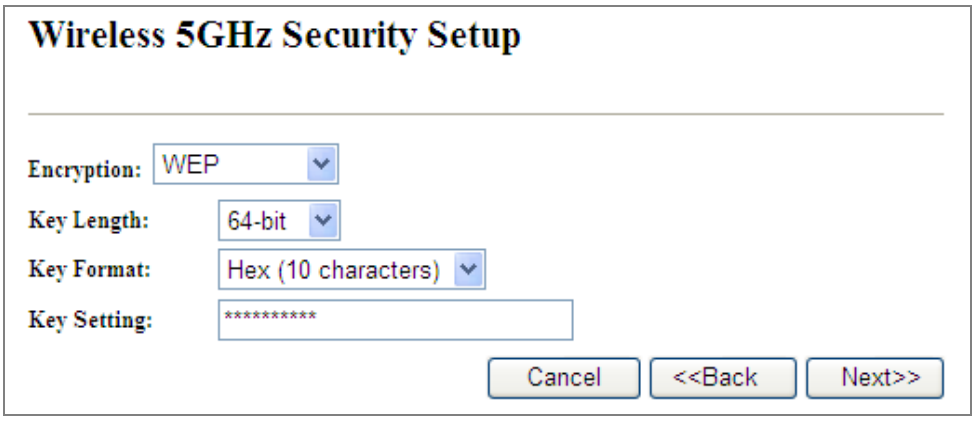


Figure 4-7 5GHz Wireless Security Setup – WEP Setting

The page includes the following fields:

Object	Description
Key Length	WEP supports 64-bit or 128-bit security key.
Key Format	User can enter key in ASCII or Hex format.
Key Setting	Enter the key whose format is limited by the Key format, ASCII or Hex.

■ Encryption: WPA-PSK

The following picture shows how to set up **WPA-PSK** security. You can select **WPA (TKIP)**, **WPA2 (AES)** and **Mixed mode**.

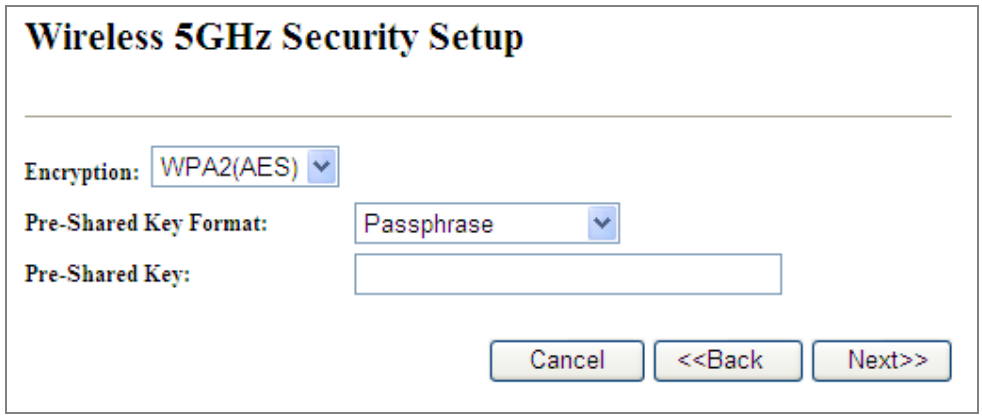


Figure 4-8 5GHz Wireless Security Setup – WPA Setting

The page includes the following fields:

Object	Description
Pre-Shared Key Format	Specify the format of the key, pass phrase or hex.
Pre-Shared Key	Enter the key whose format is limited by the key format.

Step 5: Wireless 2.4GHz Basic Settings

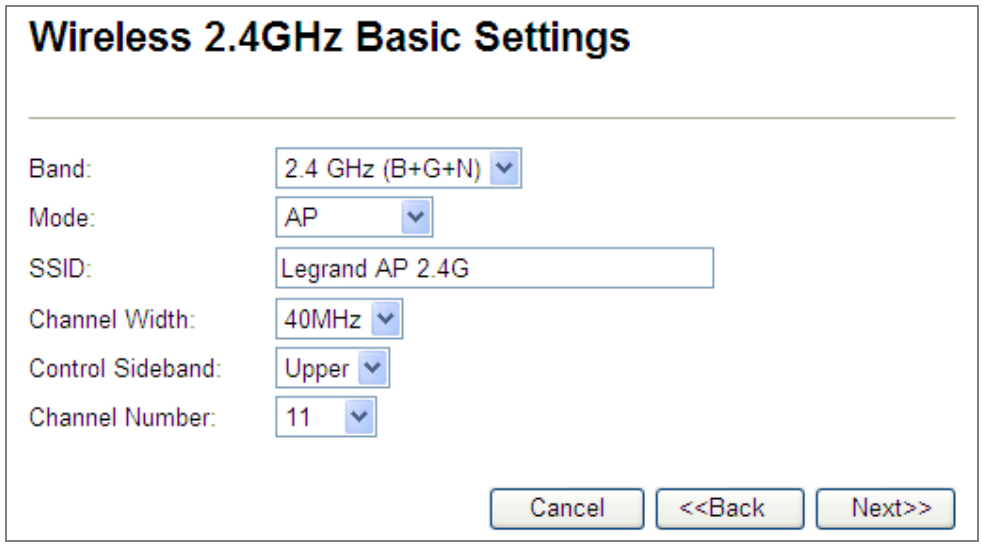


Figure 4-9 Wizard – Wireless 2.4GHz Basic Settings

The page includes the following fields:

Object	Description
Band	Supports 802.11b, 802.11g, 802.11n and mixed. Please choose its band according to your clients.

Mode	Supports AP, Client, WDS and AP+WDS mode.
SSID	Service Set Identifier, it identifies your wireless network.
Channel Width	Select 40MHz if you use 802.11n, otherwise 20MHz for the 802.11b/g mode.
Control Sideband	It is only valid when you choose channel width 40MHz.
Channel Number	Indicates the channel setting for the AP.

Step 6: Wireless 2.4GHz Security Settings

Secure your wireless network by turning on the WPA or WEP security feature on the router. For this section you can set **WEP** and **WPA-PSK** security mode.

Figure 4-10 Wizard – Wireless 2.4GHz Security Setup

■ Encryption: WEP

The following picture shows how to set the WEP security.

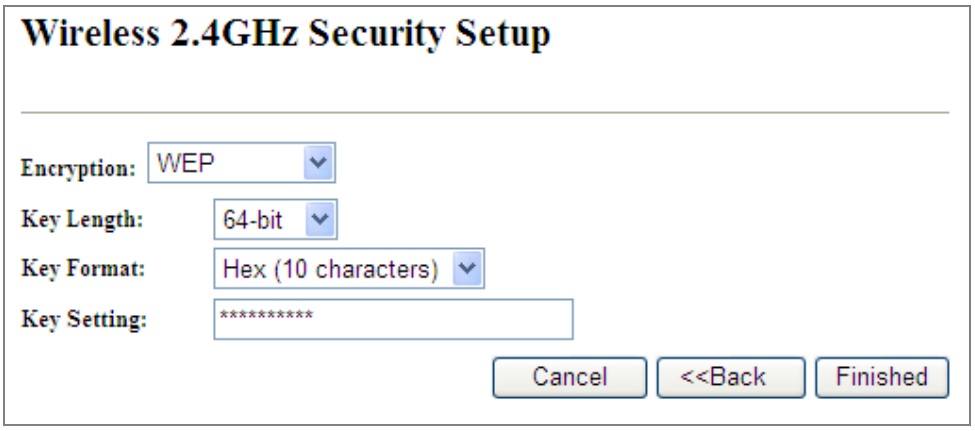


Figure 4-11 2.4GHz Wireless Security Setup – WEP Setting

The page includes the following fields:

Object	Description
Key Length	WEP supports 64-bit or 128-bit security key.

Key Format	User can enter key in ASCII or Hex format.
Key Setting	Enter the key whose format is limited by the Key format, ASCII or Hex.

■ Encryption: WPA-PSK

The following picture shows how to set **WPA-PSK** security. You can select **WPA (TKIP)**, **WPA2 (AES)** and **Mixed mode**.

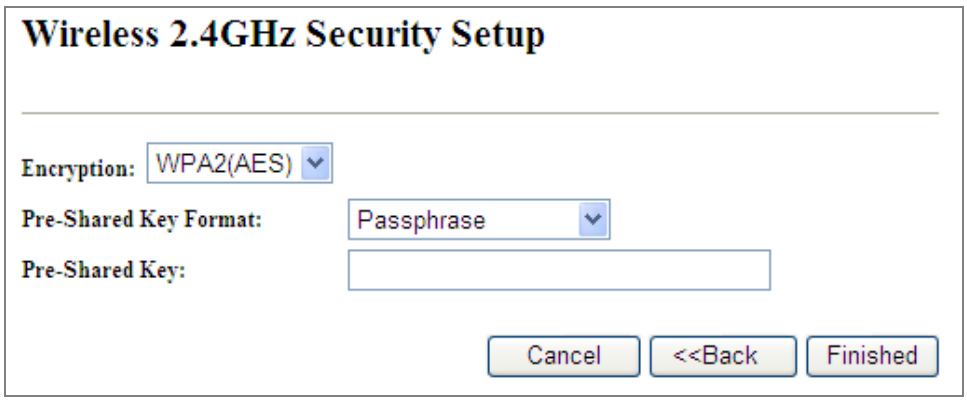


Figure 4-12 2.4GHz Wireless Security Setup – WPA Setting

The page includes the following fields:

Object	Description
Pre-Shared Key Format	Specify the format of the key, pass phrase or hex.
Pre-Shared Key	Enter the key whose format is limited by the key format.

Click the **Finished** button to make your wireless configuration to take effect and finish the **Setup Wizard**.

Figure 4-13 Setup Wizard - Finished

After rebooting, please check whether you can access the Internet or not on the "**Status**" page.

4.2 TCP / IP Settings

This page is used to configure the parameters for local area network which connects to the LAN port of your AP. Here you may change the setting for IP address, subnet mask, DHCP, etc.

4.2.1 LAN Settings

On the LAN Settings page, you can configure the IP parameters of the LAN on the screen as shown below.

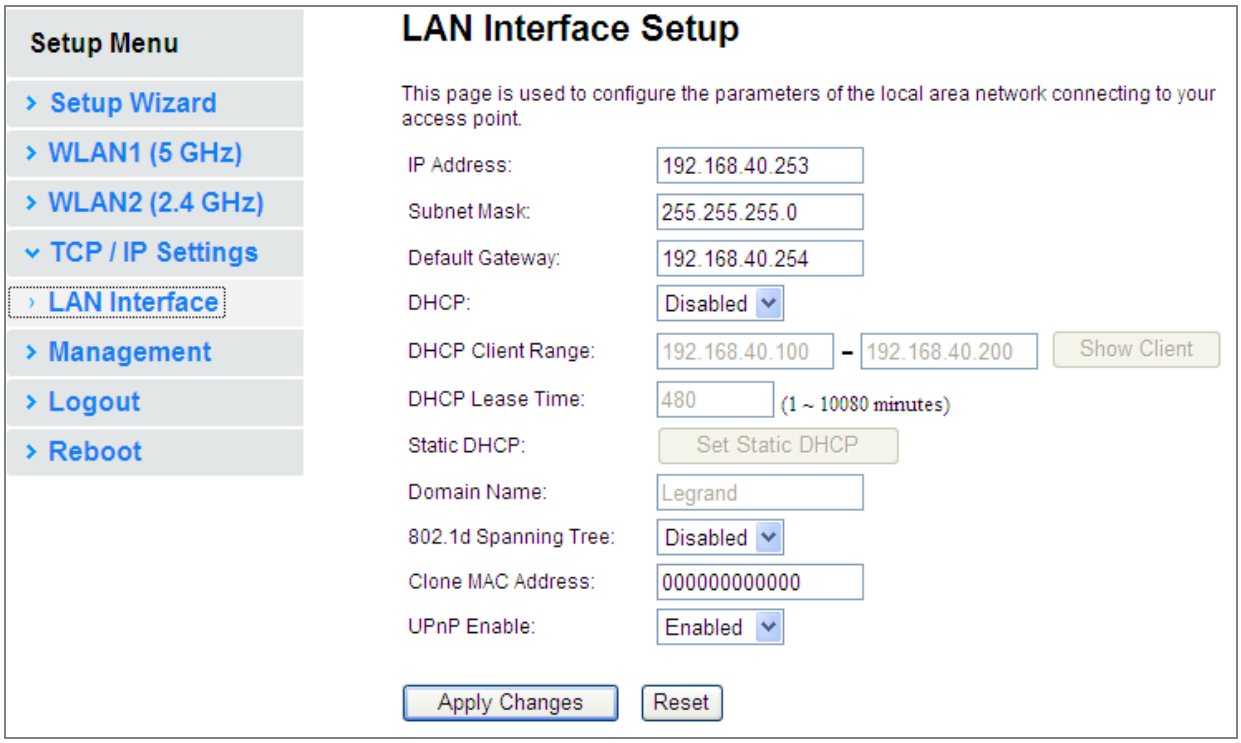


Figure 4-14 LAN Setting

The page includes the following fields:

Object	Description
IP Address	The default LAN IP address of the DA1104 is **192.168.40.253**. You can change it at your request.
Subnet Mask	Default is **255.255.255.0**. You can change it at your request.
Default Gateway	Default is **192.168.40.254**. You can change it at your request.
DHCP	You can select **Disabled**, **Client**, **or Server**. Default is **Disabled**, meaning the DA1104 must connect to a router to assign IP addresses to clients.
DHCP Client Range	For the **Server** mode, you must enter the DHCP client IP address range in the field. You can click the "**Show Client**" button to show the Active DHCP Client Table.
Static DHCP	Click the "**Set Static DHCP**" button and you can reserve some IP

	addresses for those network devices with the specified MAC addresses anytime when they request IP addresses.
Domain Name	Default is **Legrand**.
802.1d Spanning Tree	You can enable or disable the Spanning Tree function.
Clone MAC Address	You can input an MAC address here for using clone function.
UPnP Enable	You can enable or disable the UPnP function. The UPnP feature allows the devices, such as Internet computers, to access the local host resources or devices as needed. UPnP devices can be automatically discovered by the UPnP service application on the LAN.

If you change the IP address of LAN, you must use the new IP address to login the AP.

When the IP address of the DA1104 is changed, the clients on the network often need to wait for a while or even reboot before they can access the new IP address. For an immediate access to the AP, please flush the NetBIOS cache on the client computer by running the "nbtstat –r" command before using the device name of the DA1104 to access its Web Management page.

4.3 WLAN1 (5GHz)

The wireless menu of WLAN1 (5GHz) contains submenus of the settings about wireless network. Please refer to the following sections for the details.

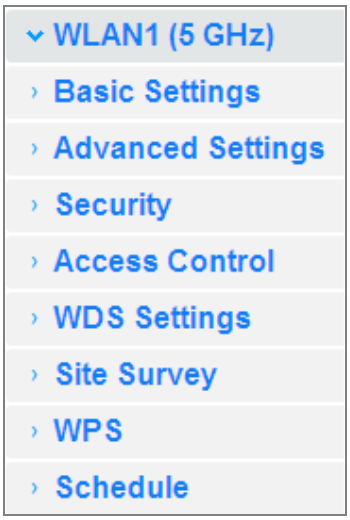


Figure 4-15 5GHz Wireless Main Menu

4.3.1 Basic Settings

Choose menu "**WLAN1 (5GHz) → Basic Settings**" and you can configure the 5GHz basic settings for the wireless network on this page. After the configuration is done, please click the "Apply Changes" button to save the settings.

First of all, the wireless AP supports multiple wireless modes for different network applications, which include:

- **AP**
- **Multiple SSIDs**
- **Universal Repeater**
- **Client**
- **WDS**
- **AP+WDS**

It is easy to combine the DA1104 with an existing wired network. The DA1104 provides a total network solution for the home and the SOHO users.

- **AP**

  Standard **Access Point**

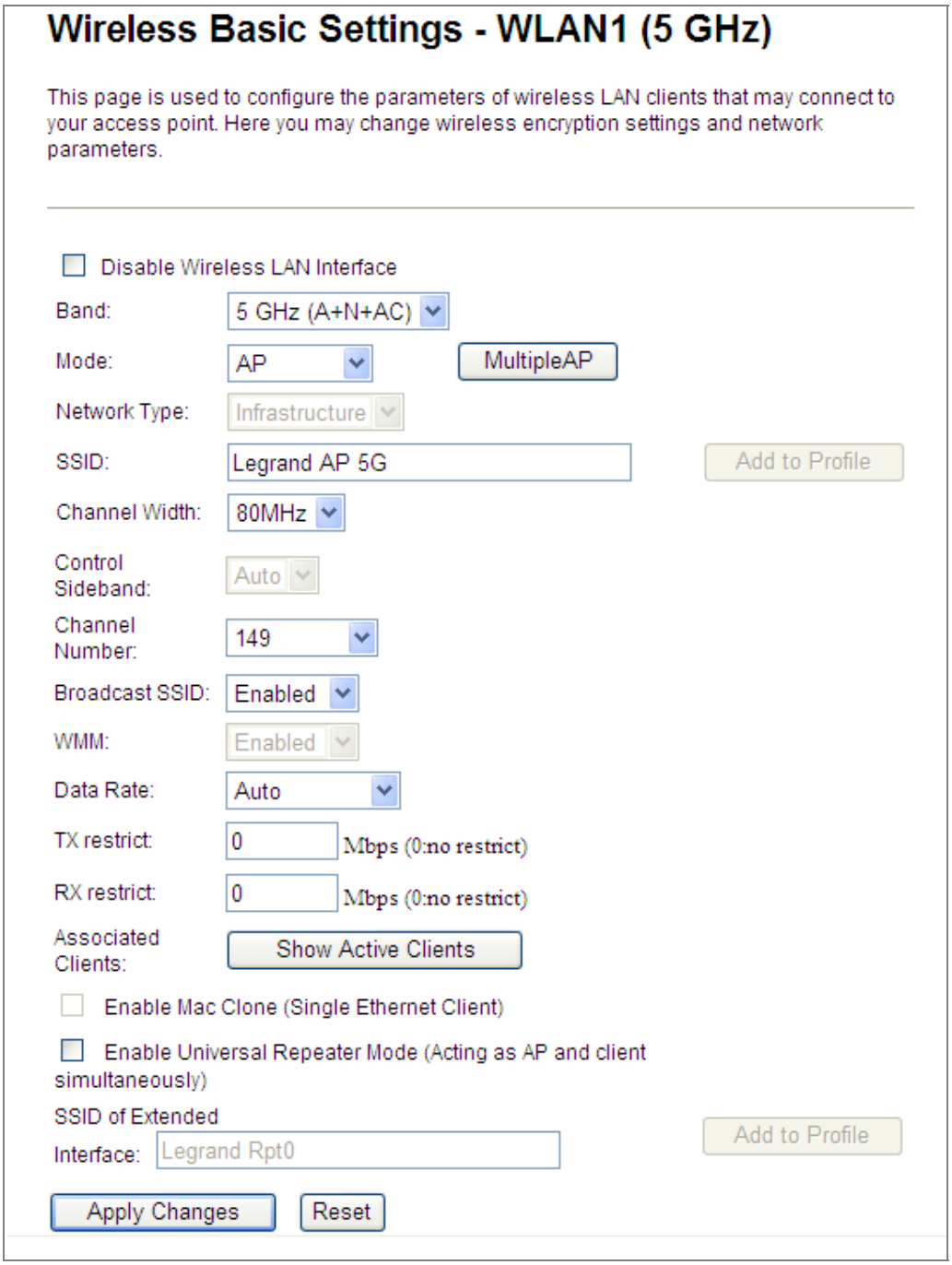


Figure 4-16 5GHz Wireless Basic Settings of AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and then all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the DA1104.

	■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps (2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID functions.
SSID	The ID of the wireless network. User can access the wireless network through it only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 5G**
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Channel Number	You can select the operating frequency of wireless network. Default: **149**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the AP can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater Mode, check the box and enter the SSID you want to broadcast in the field below. Then please click

simultaneously)	"Security" submenu for the related settings of the AP you want to connect with.

■ Multiple-SSID

Enable multiple-SSID can broadcast multiple WLAN SSID's using virtual interfaces. You can have different encryption settings for each WLAN and you can restrict what they have access to.

Choose menu "**WLAN1 (5GHz)** → **Basic Settings** → **Multiple AP**" to configure the device as a general wireless access point with multiple SSIDs.

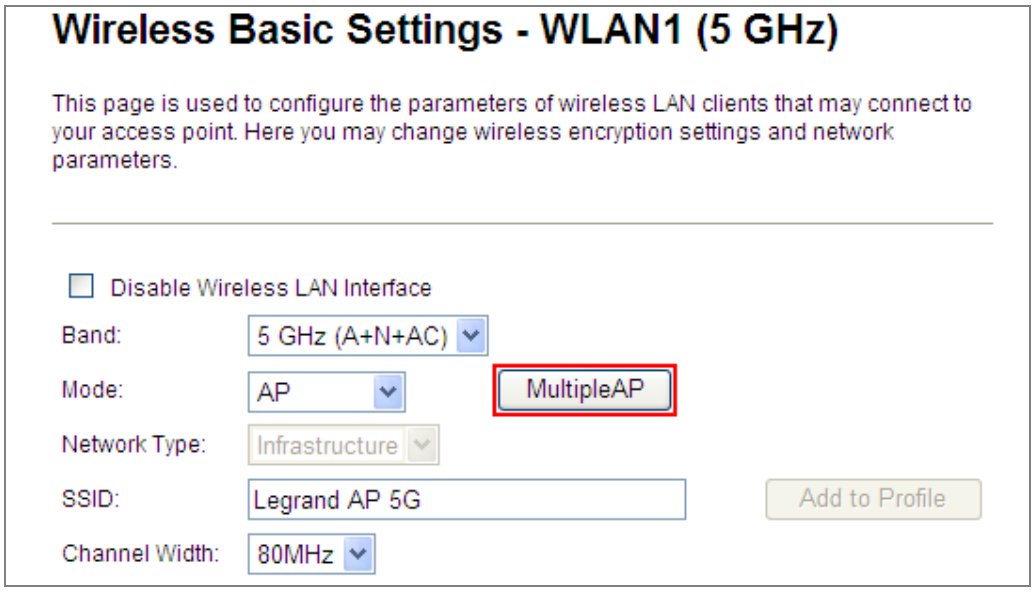


Figure 4-17 5GHz Wireless Basic Settings – Multiple AP

The device supports up to four multiple Service Set Identifiers. You can go back to the **Basic Settings** page to set the Primary SSID. The SSID's factory default setting is **Legrand 5G VAP1~4 (Multiple-SSID 1~4)**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network. When the information for the new SSID is finished, click the **Apply Changes** button to let your changes take effect.

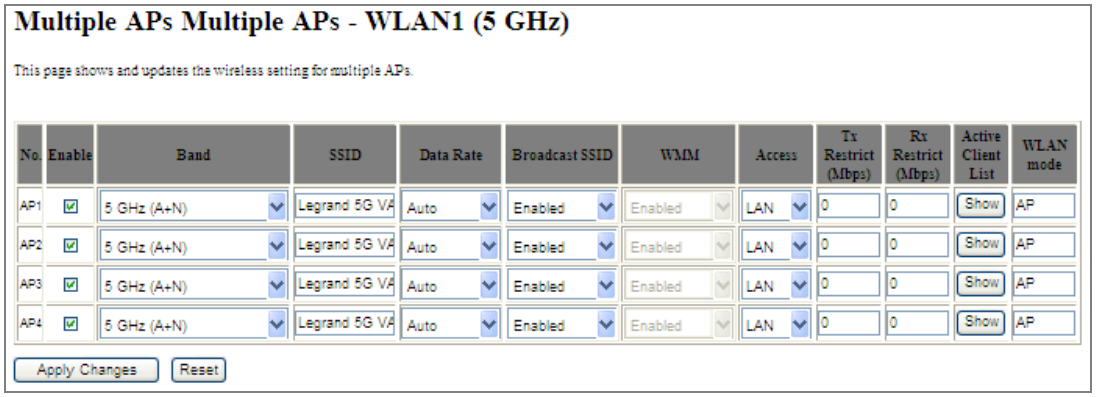


Figure 4-18 5GHz Multiple-SSID

Once you have applied and saved those settings, you can then go to the "**WLAN1 (5GHz) → Security**" page on the AP to set up security settings for each of the SSIDs.

■ Universal Repeater

This mode allows the AP with its own BSS to relay data to a root AP to which it is associated with WDS disabled. The wireless repeater relays signal between its stations and the root AP for greater wireless range.

Here is the example of how to configure **Universal Repeater Mode**. Please take the following steps:
To configure each wireless parameter, please go to the "**WLAN1 (5GHz) → Basic Settings**" page.

Step 1. Configure wireless mode to "**AP**" and then check "**Enable Universal Repeater Mode (Acting as AP and client simultaneously)**". Click "**Apply Changes**" to take effect.

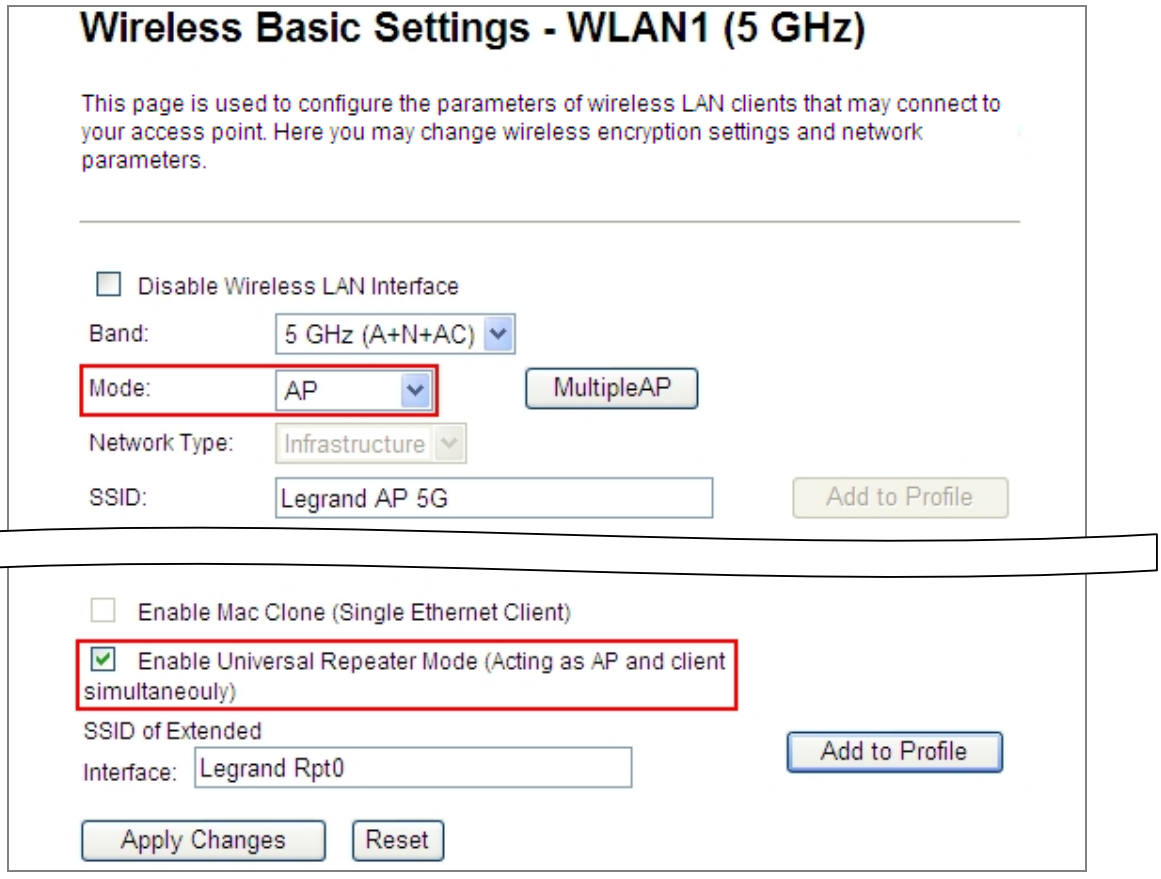


Figure 4-19 5GHz Universal Repeater-1

Step 2. Go to **5GHz Site Survey** page to find the root AP. Select the root AP that you want to repeat the signal and then click "**Next**".

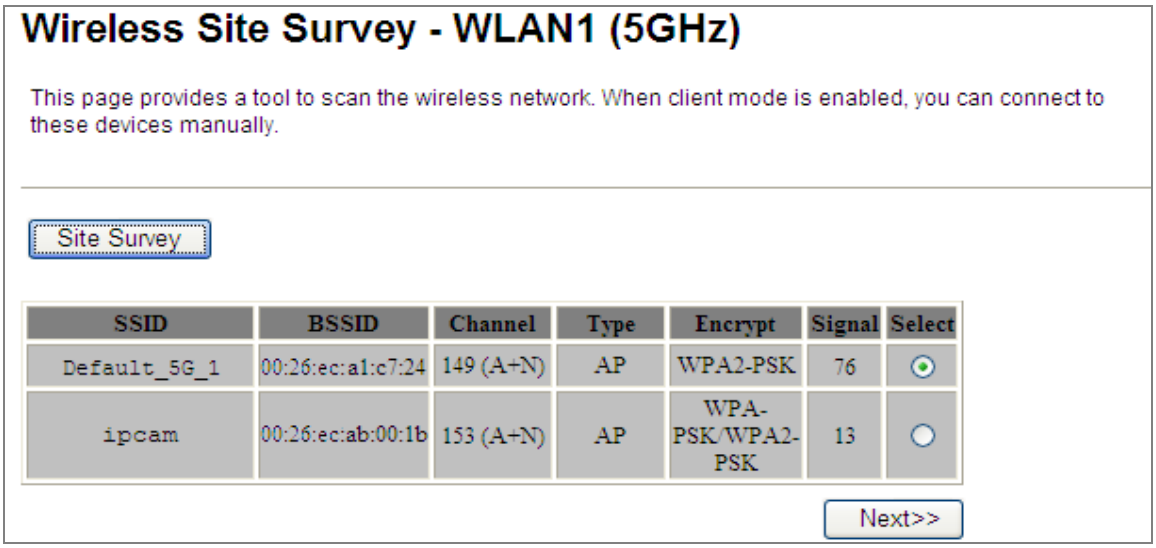


Figure 4-20 5GHz Universal Repeater-2

Step 3. Select the correct encryption method and enter the security key. Then, click "**Connect**".

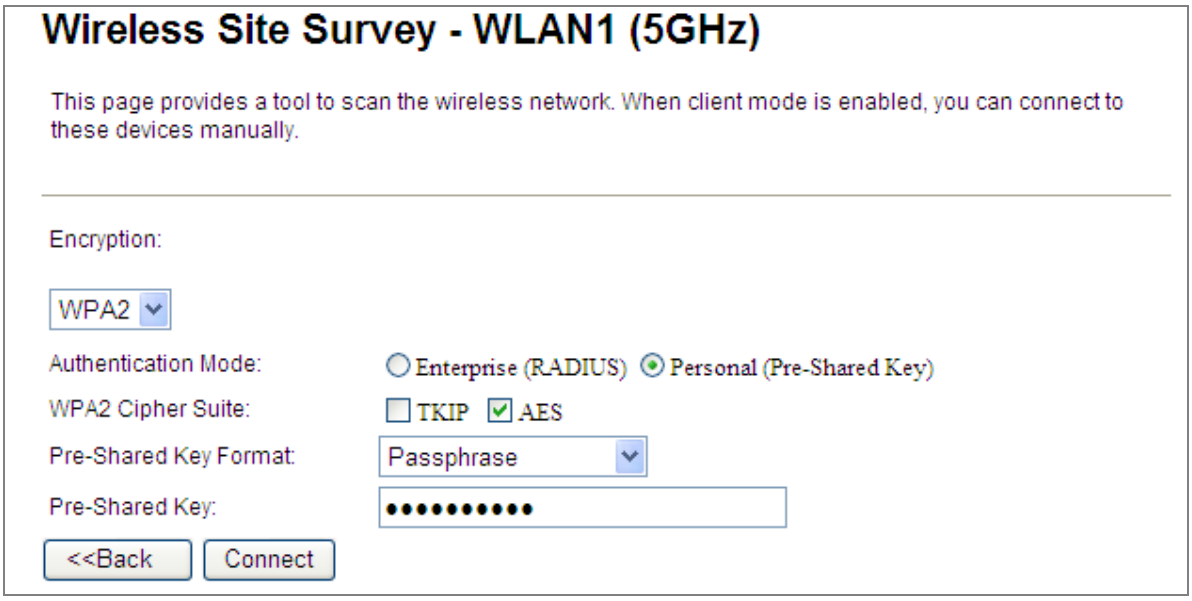


Figure 4-21 5GHz Universal Repeater-3

Step 4. Check "**Add to Wireless Profile**" and click "**Reboot Now**".

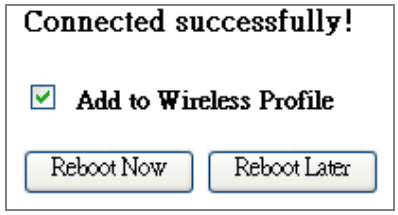


Figure 4-22 5GHz Universal Repeater-4

Step 5. Go to "**Management-> Status**" page to check whether the state of Repeater interface should be "**Connected**".

Wireless 1 Repeater Interface Configuration	
Mode	Infrastructure Client
SSID	Default_5G_1
Encryption	WPA2
BSSID	00:26:ec:00:14:75
State	Connected

Figure 4-23 5GHz Universal Repeater-5

■ **Client (Infrastructure)**

Combine the Wireless Router to the Ethernet devices such as TV, game player, or HDD and DVD, to make them be wireless stations.

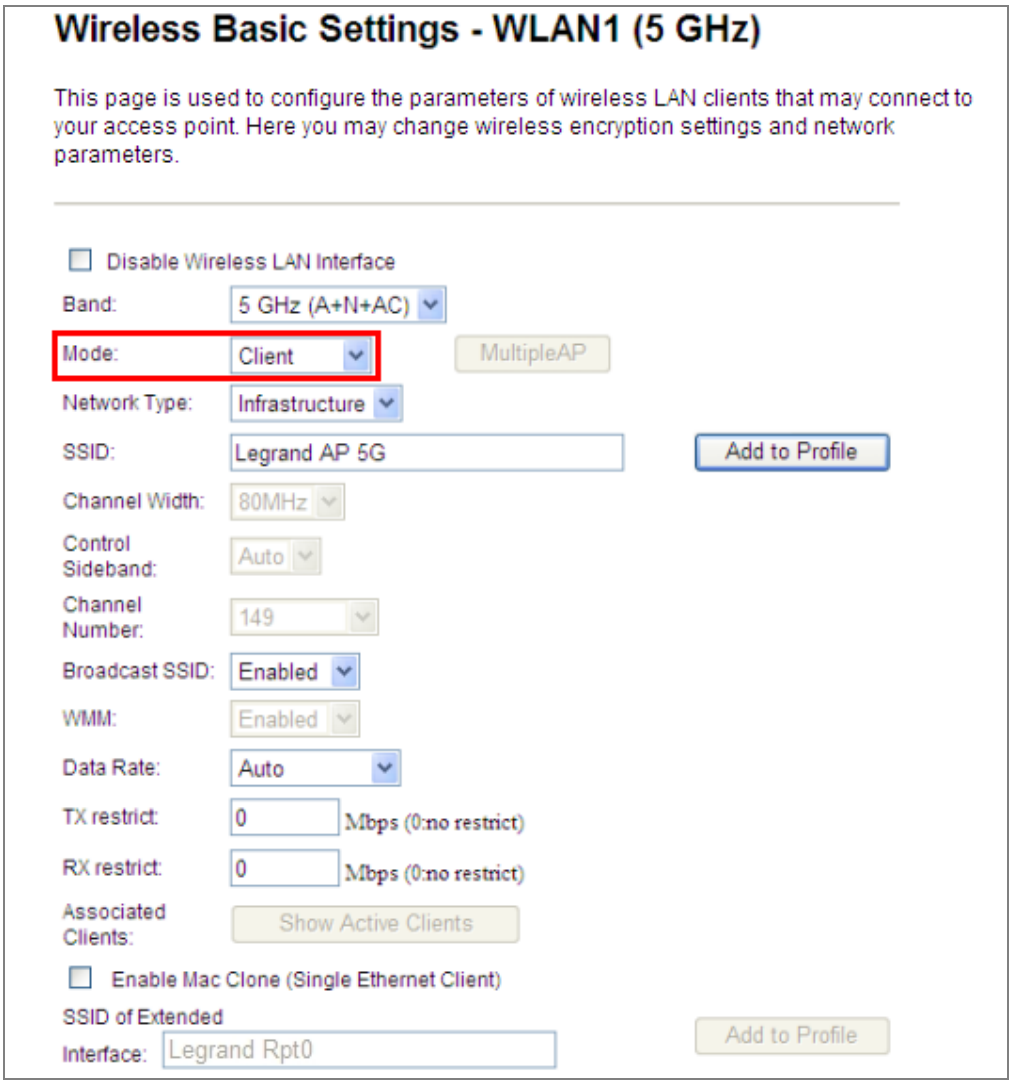


Figure 4-24 5GHz Wireless Basic Settings – Client

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the DA1104. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps (2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Network Type	In **Infrastructure**, the wireless LAN serves as a wireless station. And the user can use the PC equipped with the DA1104 to access the wireless network via other access points. In **Ad hoc**, the wireless LAN will use the Ad-hoc mode to operate. Default is "**Infrastructure**". Note: Only while the wireless mode is set to "**Client**", can the **Network Type** be configured.
SSID	The ID of the wireless network. User can access the wireless network via its ID. However, if you switch to Client mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 5G**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the DA1104 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can

	provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Enable Mac Clone (Single Ethernet Client)	Enable Mac Clone.

➢ Example of how to configure **Client Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**WLAN1 (5GHz)** → **Basic Settings**" page.

Step 1. Go to "**WLAN1 (5GHz)** → **Site Survey**" page and click "**Site Survey**" button.

Step 2. Choose the root AP from the list. If the root AP is not listed in the table, re-click "**Site Survey**" to update the list.

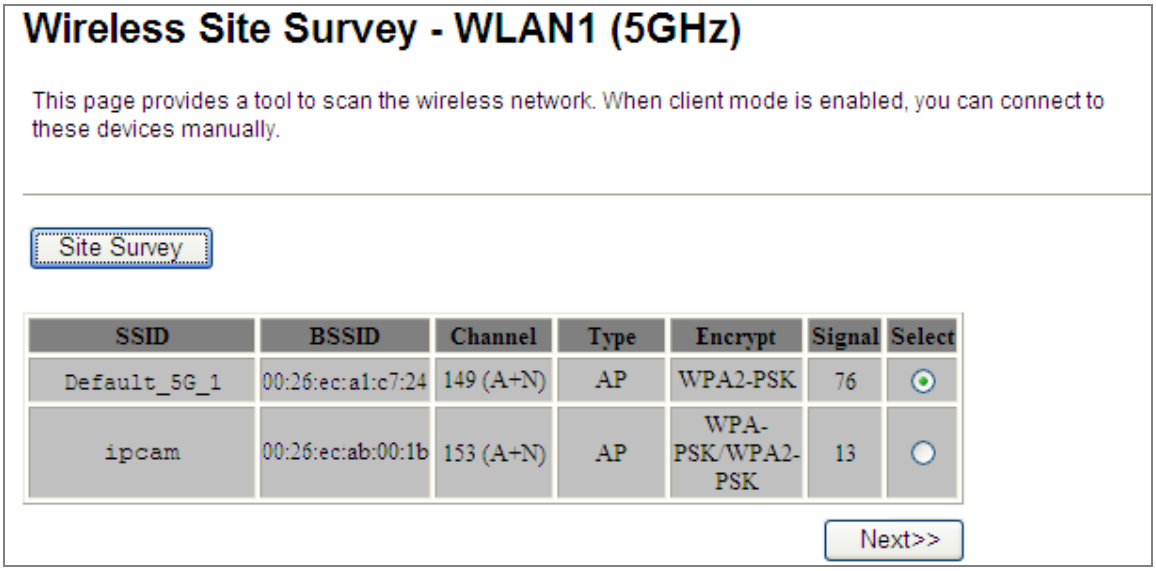


Figure 4-25 Client – AP List

Step 3. Enter the Security Key of the root AP and then click "**Connect**".

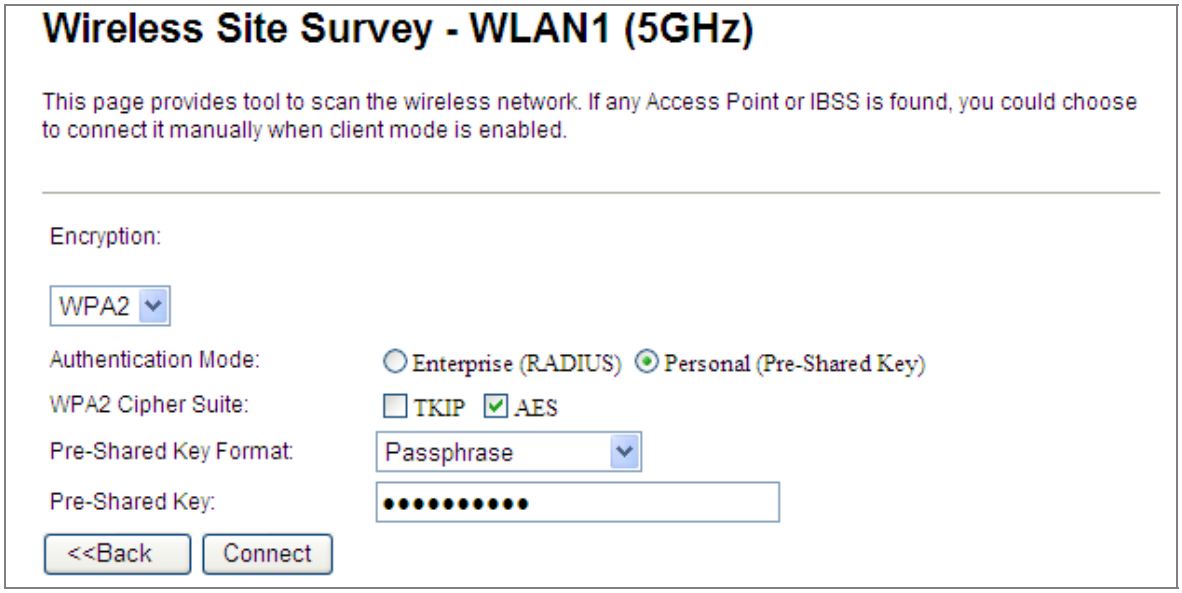


Figure 4-26 Client – Security

Step 4. Wait until the connection established. Check the "**Add to Wireless Profile**" option and then reboot it.

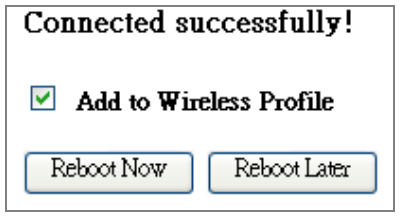


Figure 4-27 Client – Status

■ **WDS**

Connect this Wireless AP with up to 8 WDS-capable wireless APs to expand the scope of network.

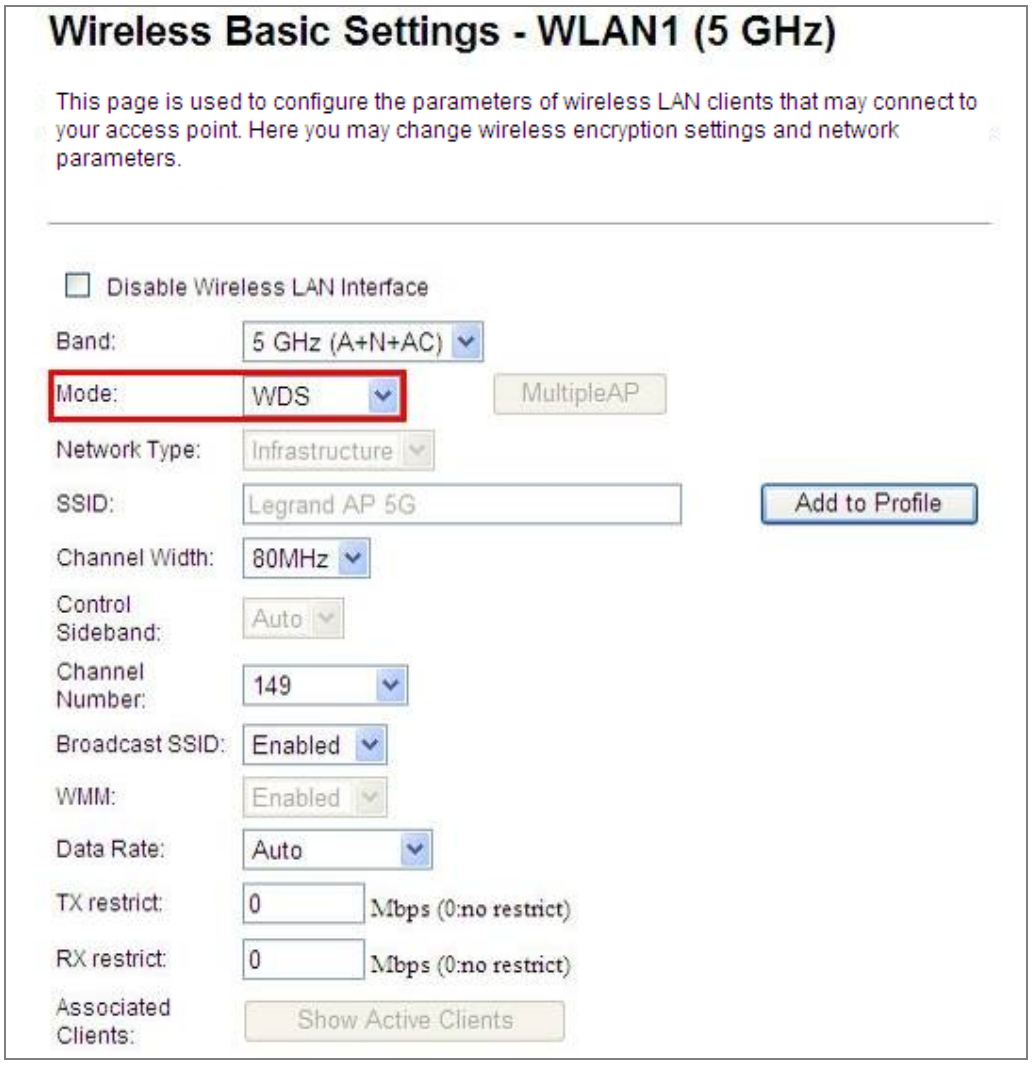


Figure 4-28 5GHz Wireless Basic Settings – WDS

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the DA1104. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps (2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps

	■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

■ **AP+ WDS**

Connect this wireless AP with up to 8 WDS-capable wireless APs, and connect another AP to provide service for all wireless stations within its coverage.

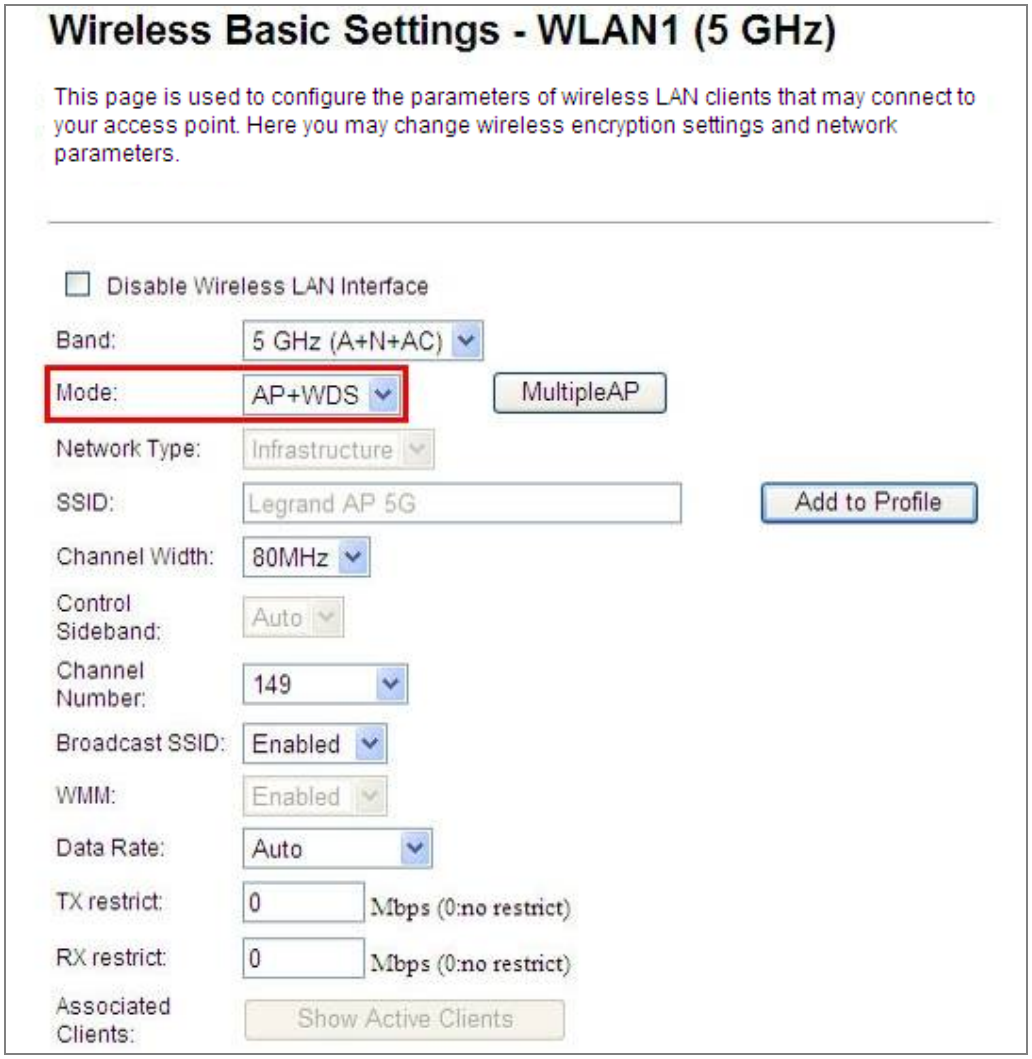


Figure 4-29 5GHz Wireless Basic Settings – WDS+AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the DA1104. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps

	■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps (2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID functions.
SSID	The ID of the wireless network. User can access the wireless network via its ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 5G**
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the DA1104 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

4.3.2 Advanced Settings

Choose menu "**WLAN1 (5GHz)→ Advanced Settings**" and you can configure the 5GHz advanced settings for the wireless network on this page. After the configuration, please click the "Apply" button to save the settings.

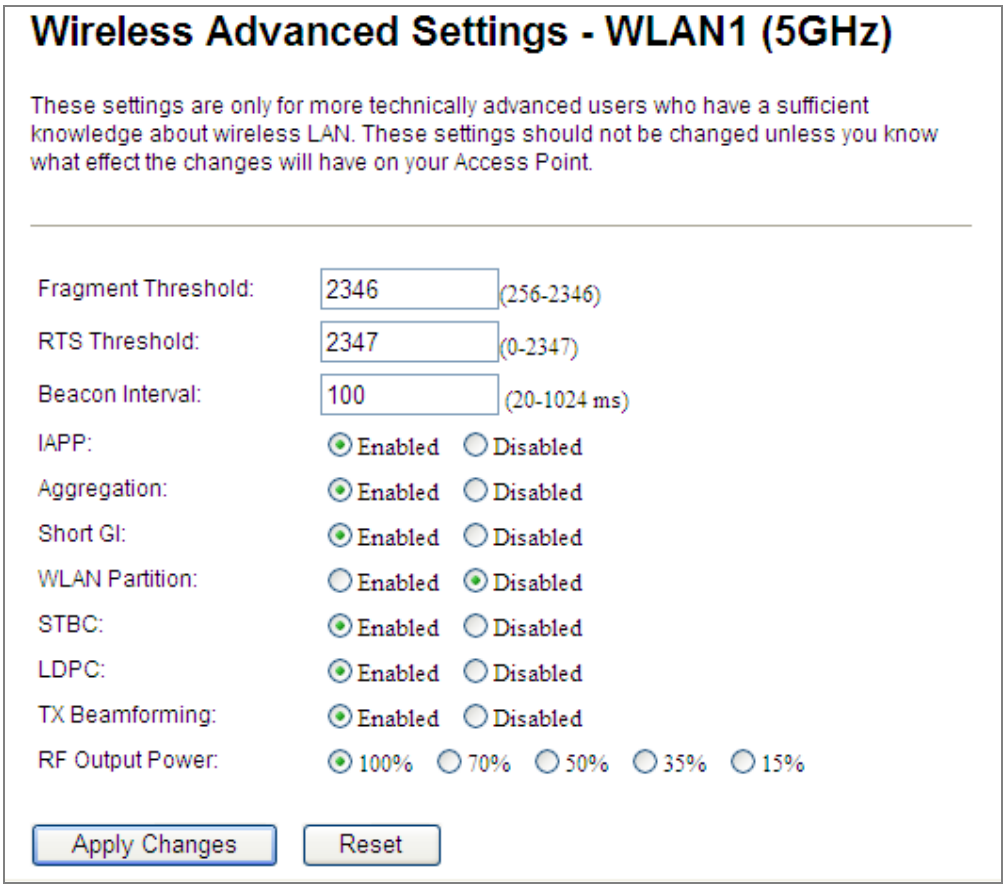


Figure 4-30 Wireless Advanced Settings – 5GHz

The page includes the following fields:

Object	Description
Fragment Threshold	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is "2346".
RTS Threshold	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is "2347".
Beacon Interval	The interval of time that this access point broadcasts a beacon. Beacon is used to synchronize the wireless network. Default is "100".
IAPP	**IAPP (Inter-Access Point Protocol)** enabled is recommended as it describes an optional extension to IEEE 802.11 that provides wireless access-point communications among multivendor systems. Default is "Enabled".

Aggregation	It is a function where the values of multiple rows are grouped together. Default is "Enabled"
Short GI	It is used to set the time that the receiver waits for RF reflections to settle out before sampling data. Default is "Enabled"
WLAN Partition	This feature is also called "**WLAN isolation**" or "**Block Relay**". If this is enabled, wireless clients cannot exchange data through the DA1104. Default is "Disabled".
STBC	Activate **Space Time Blocking Code (STBC)** which does not need channel statement information (CSI). Default Setting: "Enabled"
LDPC	Low-density Parity-check Code is wireless data transmit algorithm. Default Setting: "Enabled"
TX Beamforming	It is a technique that focuses the APs transmit energy of the MIMO spatial streams towards the target STAs. Default is "Enabled".
RF Output Power	The users can adjust the wireless output power here. The setting effects the wireless coverage for users' connectivity both authorized and non-authorized users. Default is "100%".

4.3.3 Security

Choose menu "**WLAN1 (5GHz) → Security**" and you can configure the settings of wireless security for the wireless network on this page. After the configuration, please click the "Apply Changes" button to save the settings.

Figure 4-31 Wireless Security Settings – 5GHz

The page includes the following fields:

Object	Description

Select SSID	Select the SSID you want to configure the wireless security function, which includes the root one and the client one.
Encryption	■ **Disable:** No security setup for wireless connection.
	■ **WEP:** It is based on the IEEE 802.11 standard. And the default setting of authentication is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request. Furthermore, you can select **Key Length** and enter 10 and 26 **Hexadecimal** digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 and 13 **ASCII** characters in the **Encryption Key** field.
	■ **WPA:** WPA is a medium level encryption and is supported by most wireless devices and operating systems.
	■ **WPA2:** WPA2 is a high level encryption and is supported by most wireless devices and operating systems.
	■ **WPA / WPA2 / WPA-Mixed:** WPA Mixed Mode allows the use of both WPA and WPA2 at the same time.
Authentication Mode	■ **Enterprise (RADIUS)** When you select the authentication mode based on Enterprise (Radius Server), please enter the **IP Address**, **Port**, and **Password** of the Radius Server.
	■ **Personal (Pre-Shared Key)** When you select the other authentication mode based on Personal (Pre-Shared Key), please enter at least 8 ASCII characters (Passphrase) or 64 Hexadecimal characters. All of the Cipher Suites support **TKIP** and **AES**.
802.1x Authentication	Enable 802.1x authentication function and then please enter the **IP Address**, **Port**, and **Password** of the Radius Server.

4.3.4 Access Control

Choose menu "**WLAN1 (5GHz) → Access Control**" to allow or deny the computer of specified MAC address to connect with the DA1104 on this page. After the configuration, please click the "Apply Changes" button to save the settings.

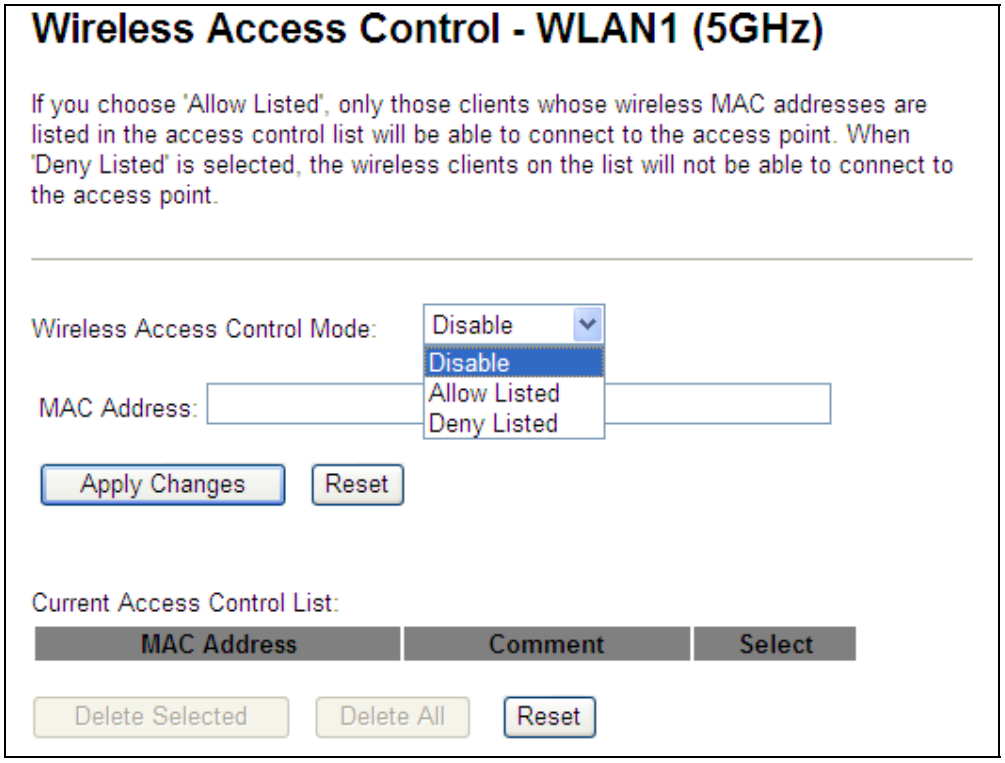


Figure 4-32 Wireless Access Control – 5GHz

The page includes the following fields:

Object	Description
Wireless Access Control Mode	You can choose to set the Allowed-List, Denied-List, or disable this function.
MAC Address	Enter the MAC address you want to allow or deny connection to the DA1104 in the field.
Comment	You can make comments on each MAC address on the list.
Current Access Control List	You can select and delete MAC addresses with the "Delete Selected" button.

To deny a MAC address of 00:26:EC:00:00:01 (for example) from connecting to your wireless network, do as follows:

Step 1. Select "**Deny**" from MAC Address Filter drop-down menu.

Step 2. Enter 0026EC000001 in the MAC address box and click "**Add**".

Step 3. Click the "**OK**" button to save your settings and you can add more MAC addresses, if you like, simply repeat the above steps.

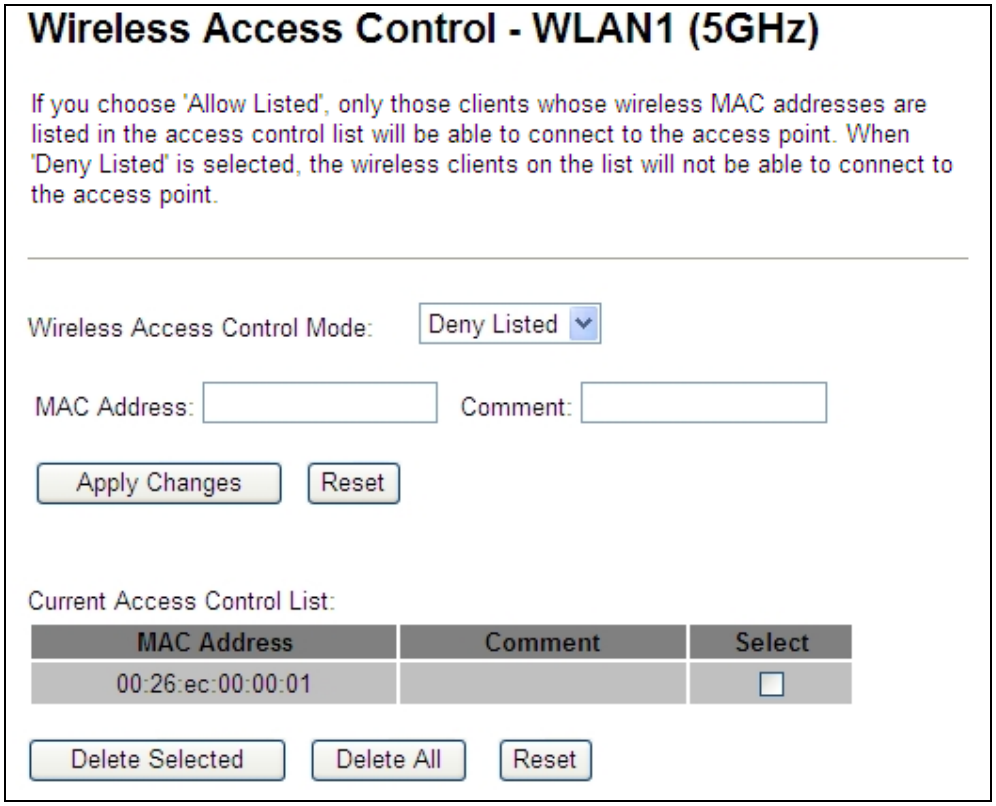


Figure 4-33 Wireless Access Control – Deny

4.3.5 WDS

The WDS (Wireless Distribution System) feature can be used to extend your existing 2.4GHz or 5GHz wireless network coverage. Here we show you how to configure this feature in 5GHz, which also applies to 2.4GHz.

Before configuring the WDS Setting page, you have to select the wireless mode to "WDS" on the **WLAN1 (5GHz)** -> **Basic Settings** web page.

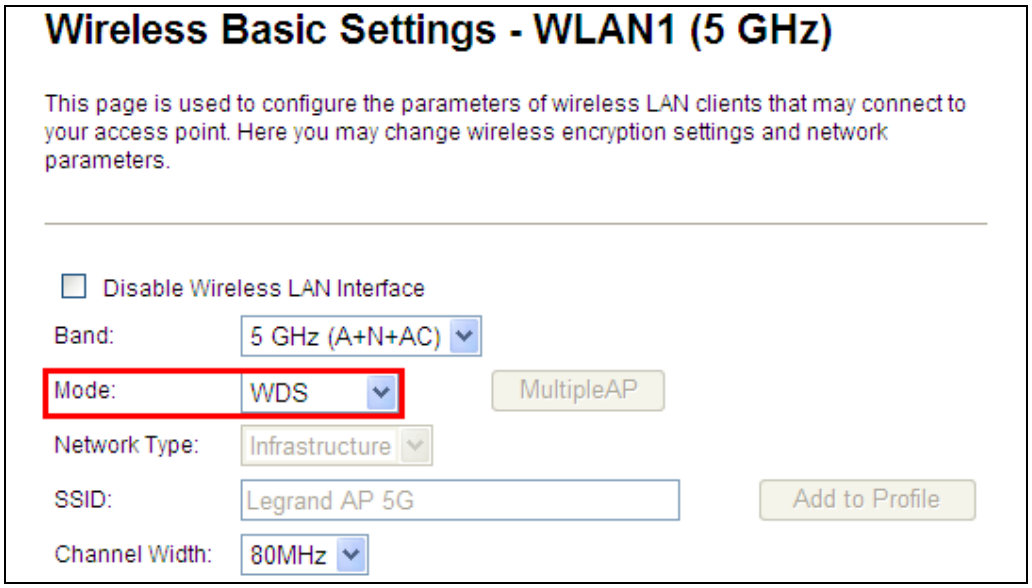


Figure 4-34 WDS Mode – 5GHz

Choose menu "**WLAN1 (5GHz) → WDS Settings**" to configure WDS to connect the DA1104 with another AP on this page. To configure the security of the WDS connection, click the "**Set Security**" button. After finishing the configuration, click the "**Apply Changes**" button to save the settings.

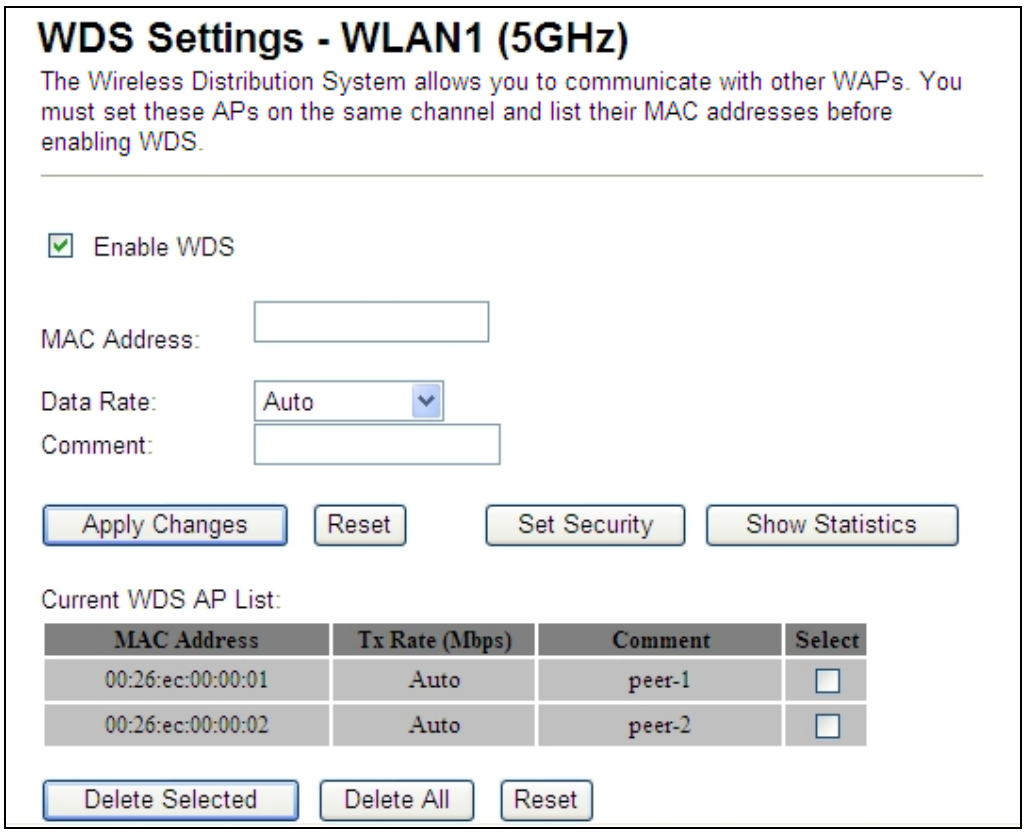


Figure 4-35 WDS Settings – 5GHz

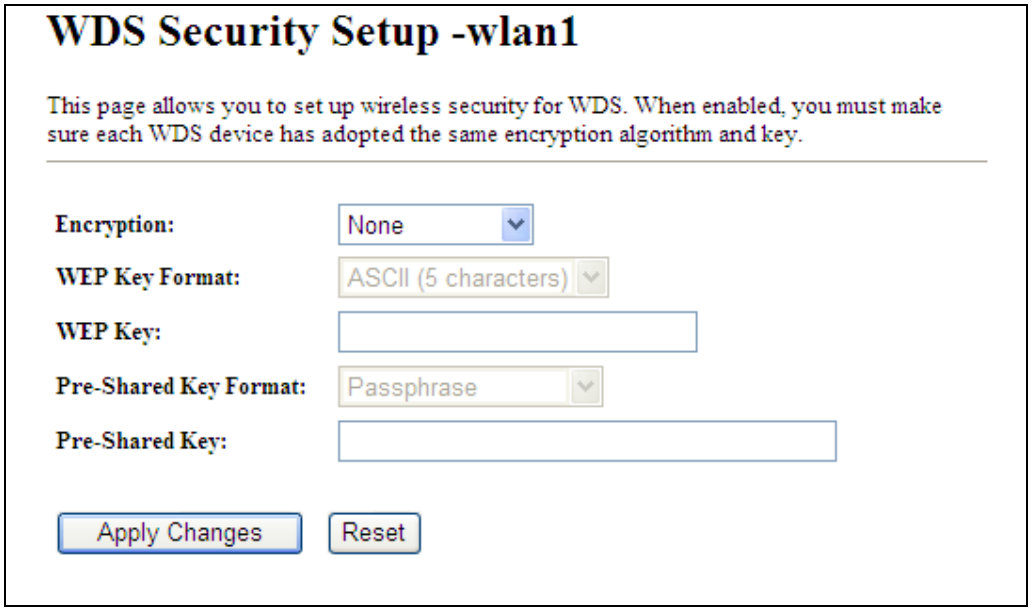


Figure 4-36 WDS – Set Security

The page includes the following fields:

Object	Description
Enable WDS	Check the box to enable the WDS function. Please select **WDS** or **AP+WDS** in the Mode of **Wireless Basic Settings** before you enable

	WDS on this page.
MAC Address	You can enter the MAC address of the AP you want to connect with.
Data Rate	Default is "**Auto"**.
Comment	You can make some comment for each MAC address on the list.
Set Security	Click the "**Set Security**" button to configure the wireless security parameters of the AP you want to connect via WDS.
Show Statics	Click the "Show Statics" button to show the WDS AP.
Current WDS AP List	You can select some MAC addresses of the AP and click the "Delete Selected" button to delete it.

Note

The WDS feature can only be implemented between 2 wireless devices that both support the WDS feature. Plus, **channel**, **security settings** and **security key** must be **the same** on both such devices. Maximum 8 remote peers are supported.

Note

To encrypt your wireless network, click "**Set Security**". For the detail of wireless security, see **section 4.3.4**. Remember to reboot the device after you save your wireless security settings; otherwise, the WDS feature may not function.

4.3.6 Site Survey

Choose menu "**WLAN1 (5GHz) → Site Survey**" to scan the available local AP. If any Access Point is found, you could choose any one to connect with manually when the **Client Mode** is enabled.

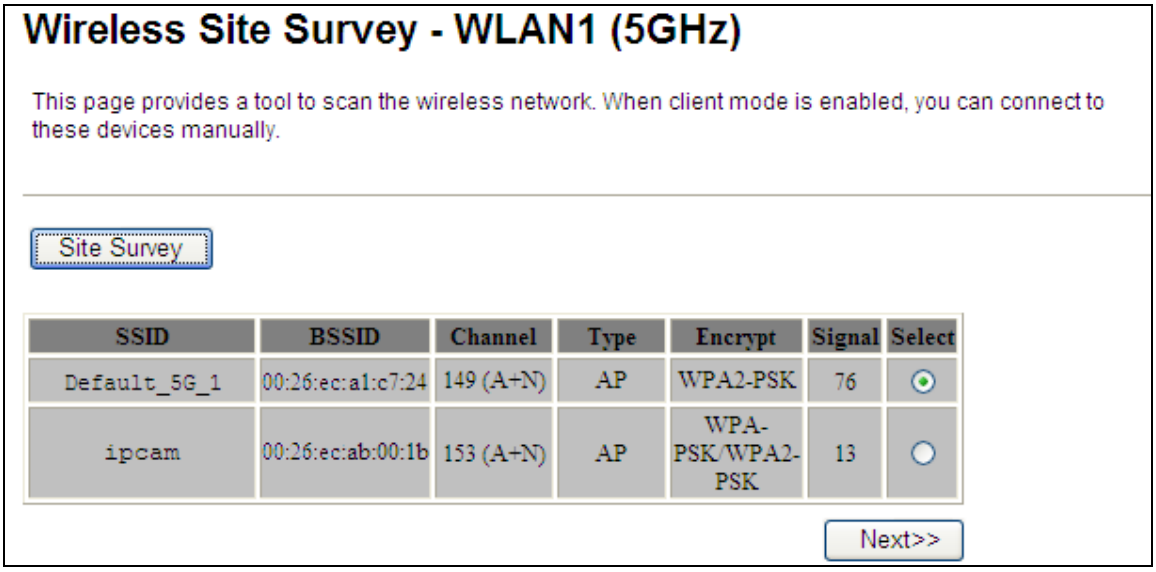


Figure 4-37 Site Survey – 5GHz

4.3.7 WPS

WPS (**Wi-Fi Protected Setup**) is designed to ease setup of security Wi-Fi networks and subsequential network management. This wireless router supports WPS features for **AP mode**, **AP+WDS mode**, **Infrastructure-Client mode**, and the wireless root interface of **Universal Repeater mode**.

Simply enter a PIN code or press the software PBC button and a secure wireless connection is established.

- **PBC:** If you find the WPS LED blinking for 2 minutes after you press the software PBC button, it means that the PBC encryption method is successfully enabled. And an authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time; if it succeeds, the wireless client device connects to your device, and the WPS LED turns off. Repeat steps mentioned above if you want to connect more wireless client devices to the device.
- **PIN :** To use this option, you must know the PIN code from the wireless client and enter it in corresponding field on your device while using the same PIN code on client side for such connection.

The page includes the following fields:

Object	Description
Disable WPS	You can check the box to disable the WPS function.
WPS Status	Here you can check if the connection via WPS is established or not.
Self-PIN Number	It is the PIN number of the DA1104.
Push Button Configuration	Click the "Start PBC" to activate WPS as well in the client device within 2 minutes.
Client PIN Number	In addition to the PBC method, you can also use the PIN method to activate the WPS. Just enter the PIN number of the client device in the field and click the "Start PIN" button.

The WPS encryption can be implemented only between your Router and another WPS-capable device.

➢ Example of how to establish wireless connection using **WPS**. Please take the following steps:

Step 1. Choose menu "**WLAN1 (5GHz) → WPS**" to configure the setting for WPS. After the configuration, please click the "Apply Changes" button to save the settings.

Step 2. Add a new device.

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and AP using either software Push Button Configuration (PBC) method or PIN method.

To build a successful connection by WPS, you should also do the corresponding configuration of the new device for WPS function.

A. By Software Push Button Configuration (PBC)

i. Click the "Start PBC" Button on the WPS page of the AP.

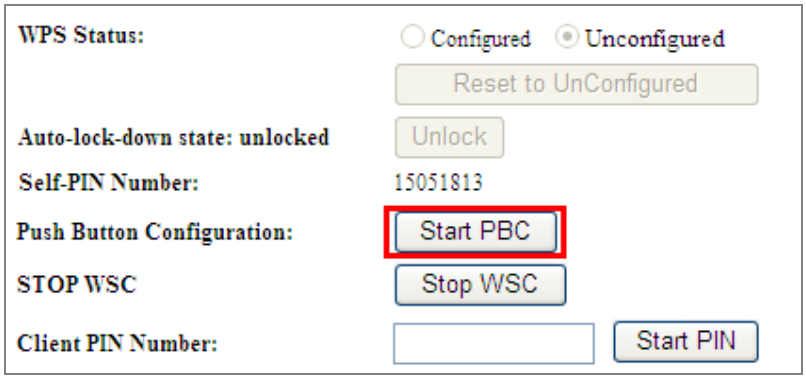


Figure 4-38 WPS-PBC – 5GHz-1

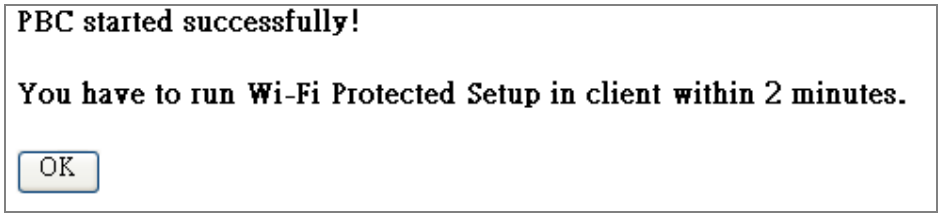


Figure 4-39 WPS-PBC – 5GHz-2

ii. The process must be finished within 2 minutes.

iii. Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

B. By PIN

If the new device supports Wi-Fi Protected Setup and the PIN method, you can add it to the network by PIN with the following two methods.

Method One: Enter the PIN of your Wireless adapter into the configuration utility of the AP

i. Enter the PIN code of the wireless adapter in the field behind **Client PIN Number** in the following figure. Then click **Start PIN**.

Note

The PIN code of the adapter is always displayed on the WPS configuration screen.

Figure 4-40 WPS-PIN – 5GHz-1

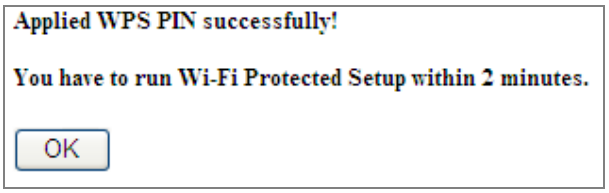


Figure 4-41 WPS-PIN – 5GHz-2

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter PIN into the AP (Enrollee)** in the configuration utility of the WPS and click **Next** until the process finishes.

Method Two: Enter the PIN of the AP into the configuration utility of your Wireless adapter

i. Click the "Start PBC" Button on the WPS page of the AP. Get the Current PIN code of the AP in WPS page (each AP has its unique PIN code).

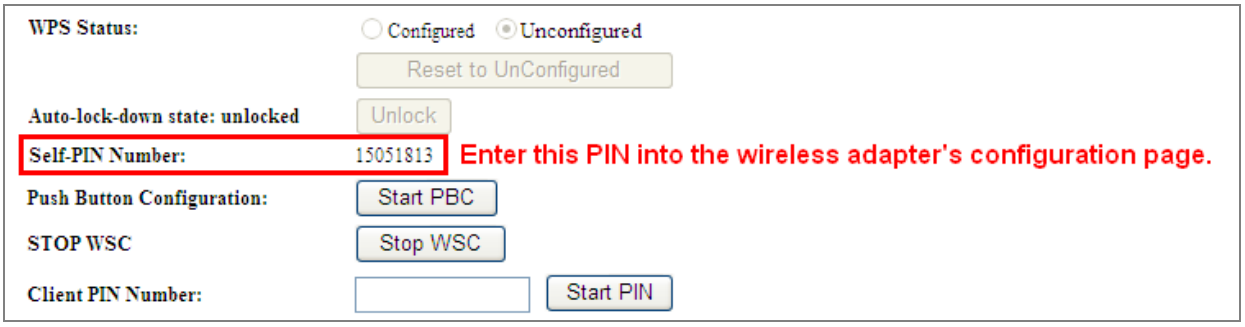


Figure 4-42 WPS-PIN – 5GHz-3

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter the PIN of the AP (Registrar)** in the configuration utility of the Wireless adapter and enter it into the field. Then click **Next** until the process finishes.

4.3.8 Schedule

Wireless schedules will enable or disable your wireless access at a set time based on your predefined schedule. This feature is often used for restricting access to all users (such as children, employees and guests) during specific times of the day for parental control or security reasons.

Choose menu "**WLAN1 (5GHz) → Schedule**" to configure the schedule rule of enabling wireless function. After the configuration, please click the "Apply Changes" button to save the settings.

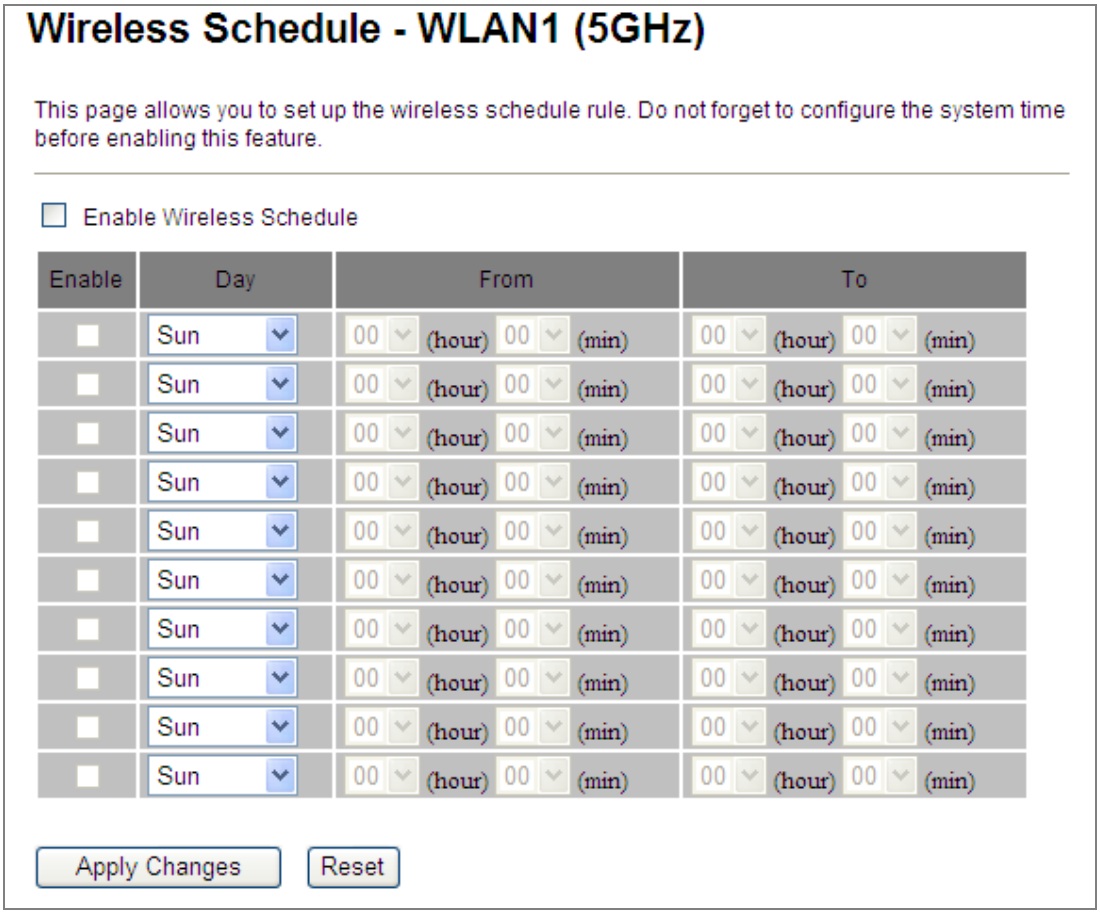


Figure 4-43 Schedule - 5GHz

Note

When setting the Wireless Schedule, it is important to ensure that your **System Clock** settings have been configured. If not, your wireless schedule will not function correctly.

4.4 WLAN2 (2.4GHz)

The Wireless menu contains submenus of the settings about wireless network. Please refer to the following sections for the details.

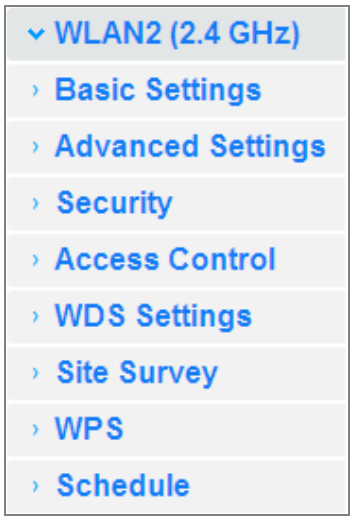


Figure 4-44 2.4GHz Wireless Main Menu

4.4.1 Basic Settings

Choose menu "**WLAN2 (2.4GHz) → Basic Settings**" to configure the 2.4GHz basic settings for the wireless network on this page. After the configuration is done, please click the "**Apply Changes**" button to save the settings.

The wireless AP supports multiple wireless modes for different network applications, which include:

- **AP**
- **Multiple SSIDs**
- **Universal Repeater**
- **Client**
- **WDS**
- **AP+WDS**

■ **AP**

Standard **Access Point**

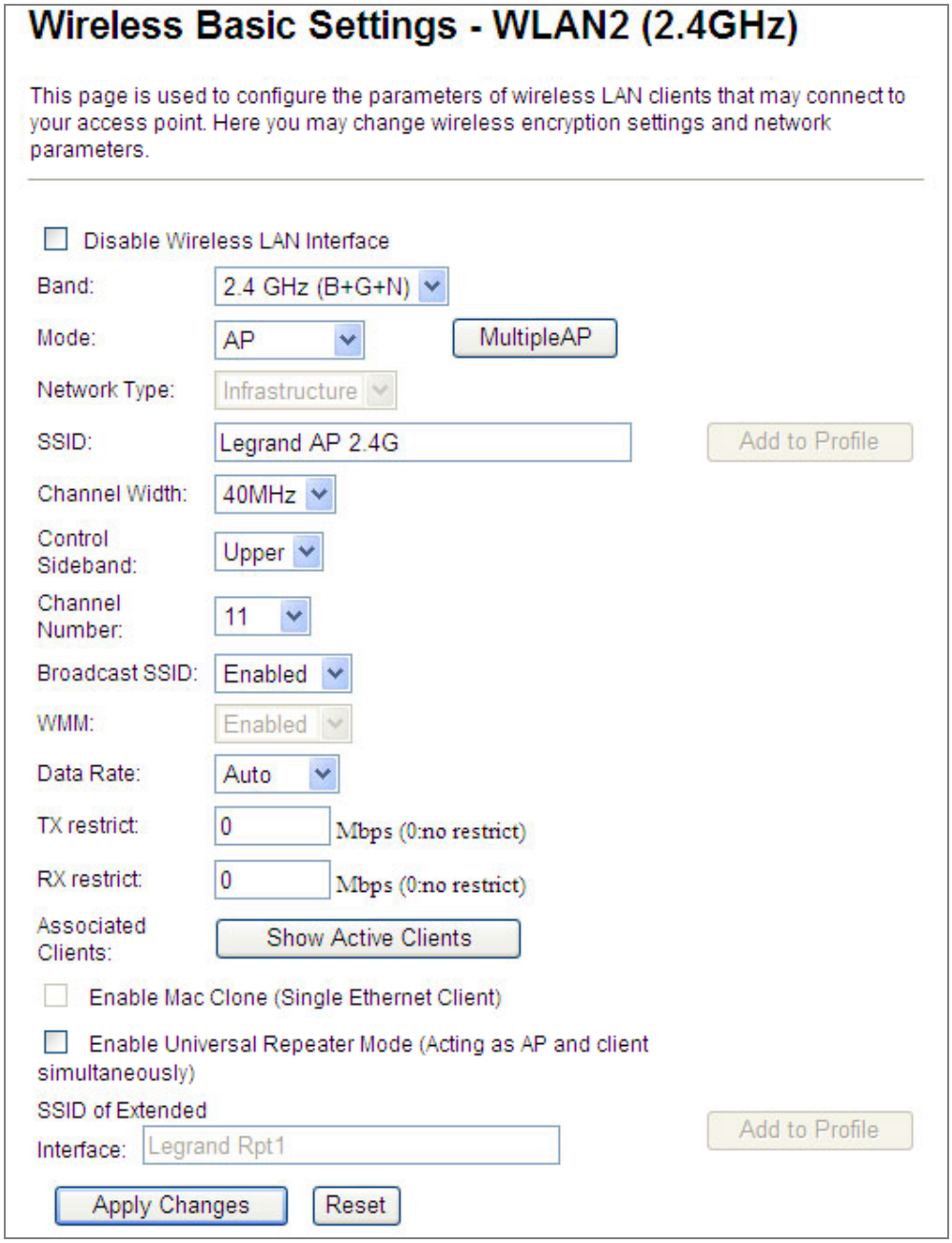


Figure 4-45 2.4GHz Wireless Basic Settings – AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the DA1104. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps

	■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 2.4G**
Channel Width	You can select **20MHz**, or **40MHz**.
Channel Number	You can select the operating frequency of wireless network. Default: **11**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the AP can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

■ Multiple-SSID

Enable multiple-SSID can broadcast multiple WLAN SSID's using virtual interfaces. You can have different encryption settings for each WLAN and you can restrict what they have access to.

Choose menu "**WLAN1 (2.4GHz)** → **Basic Settings** → **Multiple AP**" to configure the device as a general wireless access point with multiple SSIDs.

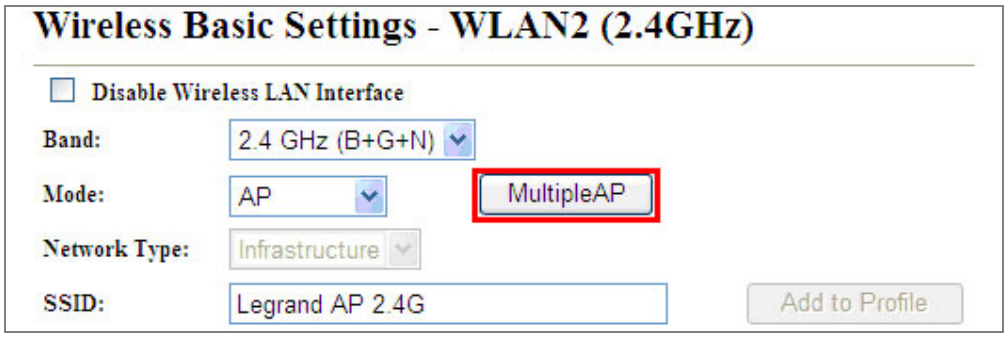


Figure 4-46 2.4GHz Wireless Basic Settings – Multiple AP

The device supports up to four multiple Service Set Identifiers. You can go back to the **Basic Settings** page to set the Primary SSID. The SSID's factory default setting is **Legrand 2.4G VAP1~4 (Multiple-SSID 1~4)**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network. When the information for the new SSID is finished, click the **Apply Changes** button to let your changes take effect.

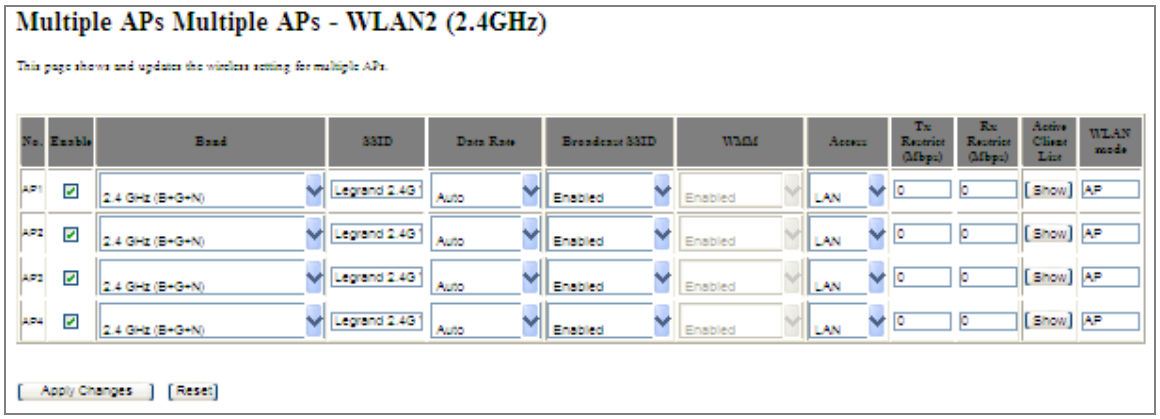


Figure 4-47 2.4GHz Multiple-SSID

Once you have applied and saved those settings, you can then go to the "**WLAN1 (2.4GHz)** → **Security**" page on the AP to set up security settings for each of the SSIDs.

■ Universal Repeater

This mode allows the AP with its own BSS to relay data to a root AP to which it is associated with WDS

disabled. The wireless repeater relays the signal between its stations and the root AP for greater wireless range.

Here is the example of how to configure **Universal Repeater Mode**. Use the following steps:

To configure each wireless parameter, go to the "**WLAN2 (2.4GHz) → Basic Settings**" page.

Step 1. Configure wireless mode to "**AP**" and then check "**Enable Universal Repeater Mode (Acting as AP and client simultaneously)**". Click "**Apply Changes**" to take effect.

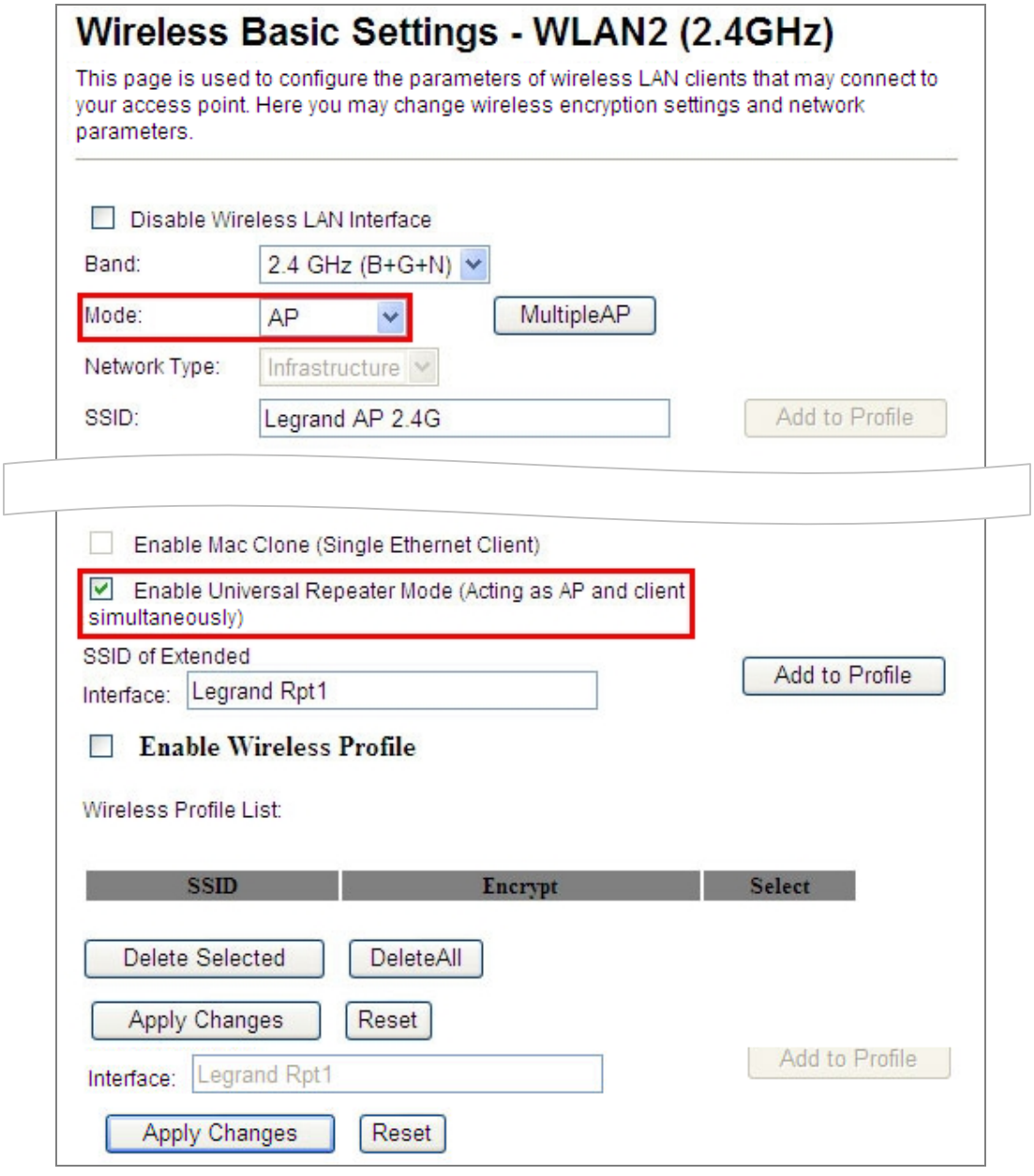


Figure 4-48 2.4GHz Universal Repeater-1

Step 2. Go to **2.4GHz Site Survey** page to find the root AP. Select the root AP that you want to repeat the signal,

and then click "**Next**".

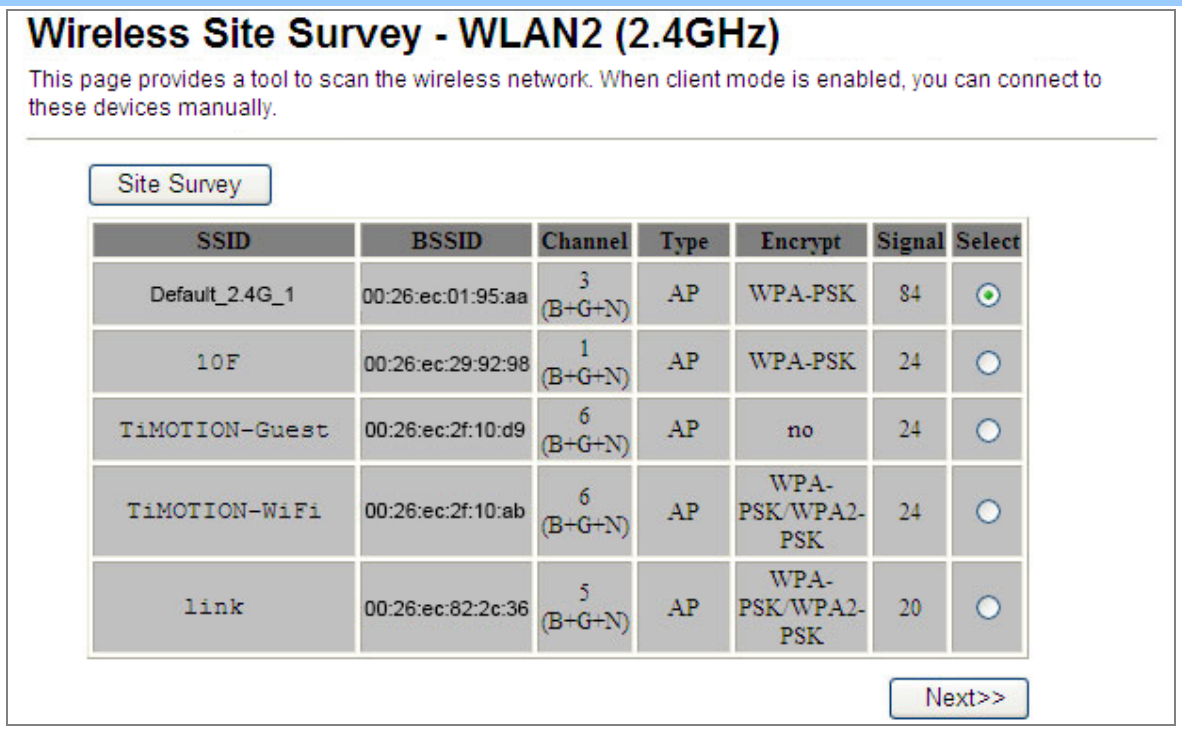


Figure 4-49 2.4GHz Universal Repeater-2

Step 3. Select the correct encryption method and enter the security key. Then, click "**Connect**".

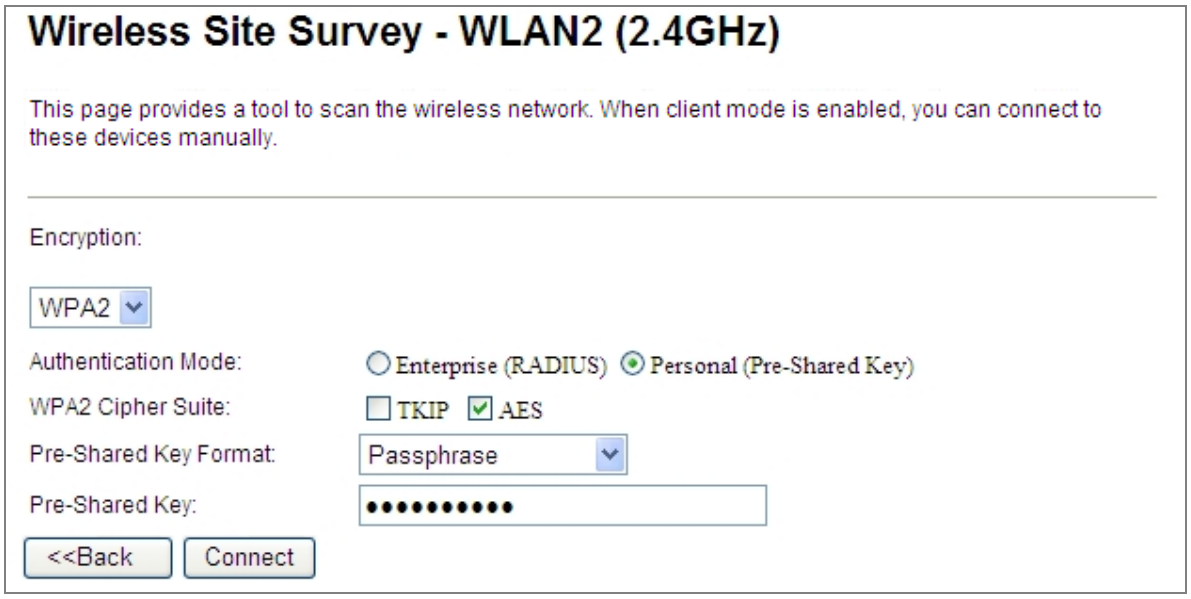


Figure 4-50 2.4GHz Universal Repeater-3

Step 4. Check "**Add to Wireless Profile**" and click "**Reboot Now**".

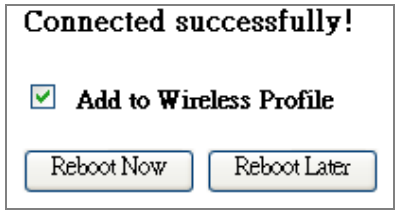
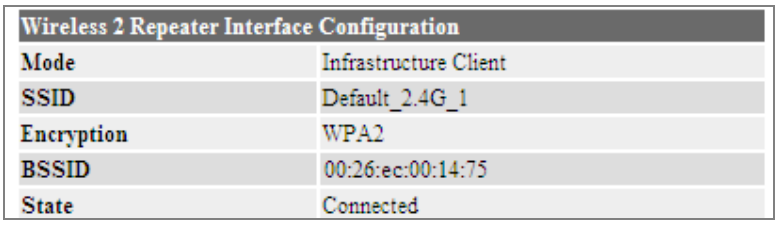


Figure 4-51 2.4GHz Universal Repeater-4

Step 5. Go to "**Management-> Status**" page to check whether the state of Repeater interface should be "**Connected**".



Wireless 2 Repeater Interface Configuration	
Mode	Infrastructure Client
SSID	Default_2.4G_1
Encryption	WPA2
BSSID	00:26:ec:00:14:75
State	Connected

Figure 4-52 2.4GHz Universal Repeater-5

■ Client (Infrastructure)

Connect the wireless router with Ethernet devices such as TVs and game players to make them wireless stations.

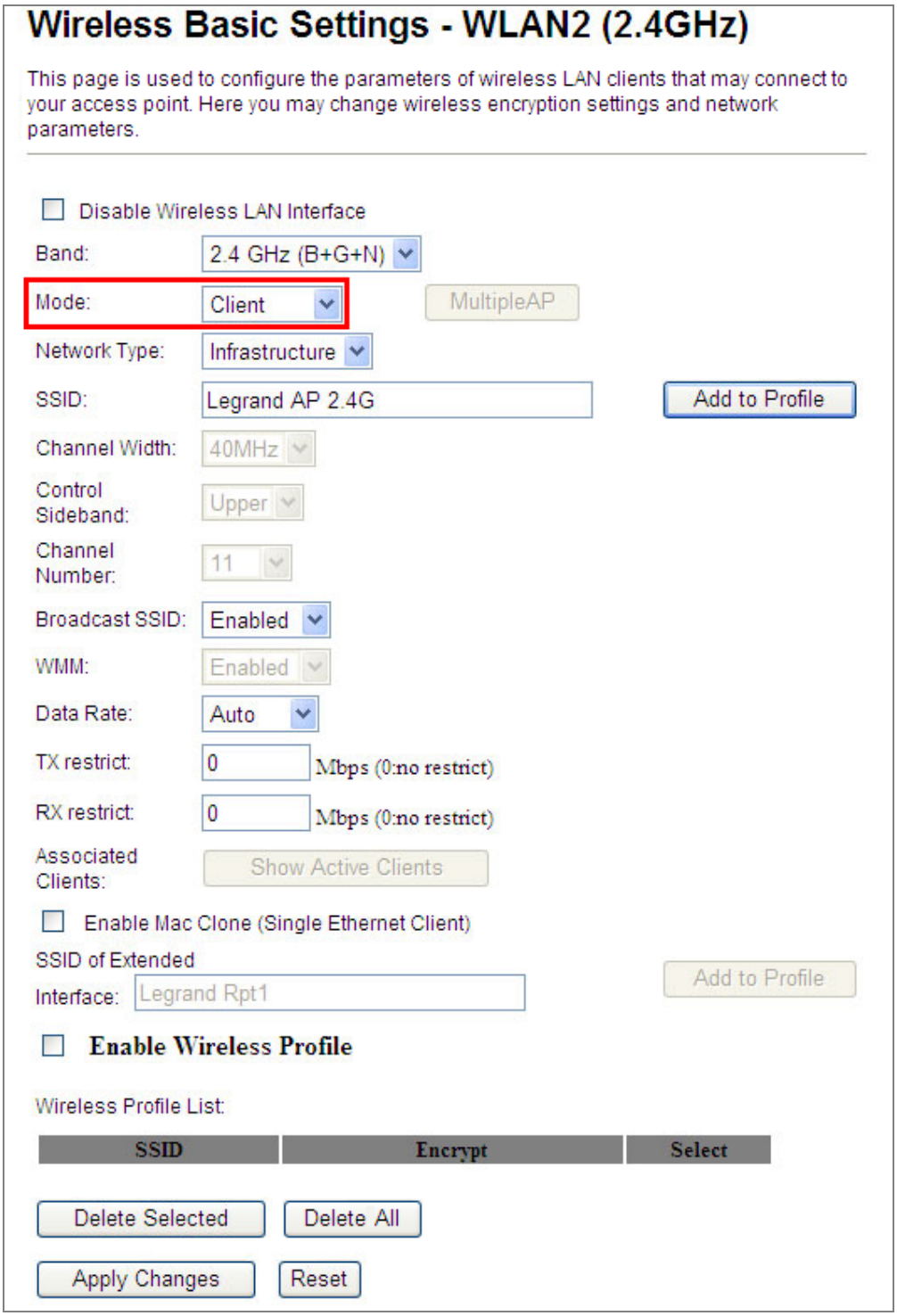


Figure 4-53 2.4GHz Wireless Basic Settings – Client

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.

Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the DA1104. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Network Type	In **Infrastructure**, the wireless LAN serves as a wireless station. And the user can use the PC equipped with the DA1104 to access the wireless network via other access points. In **Ad hoc**, the wireless LAN will use the Ad-hoc mode to operate. Default is "**Infrastructure**". Note: Only while the wireless mode is set to "**Client**" can the **Network Type** can be configured.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 2.4G**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the DA1104 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.**

	Default is "**Auto"**.
Enable Mac Clone (Single Ethernet Client)	Enable Mac Clone.

➢ Example of how to configure **Client Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**WLAN2 (2.4GHz) → Basic Settings**" page.

Step 1. Go to "**WLAN2 (2.4GHz) → Site Survey**" page and click "**Site Survey**" button.

Step 2. Choose the root AP from the list. If the root AP is not listed in the table, re-click "**Site Survey**" to update the list.

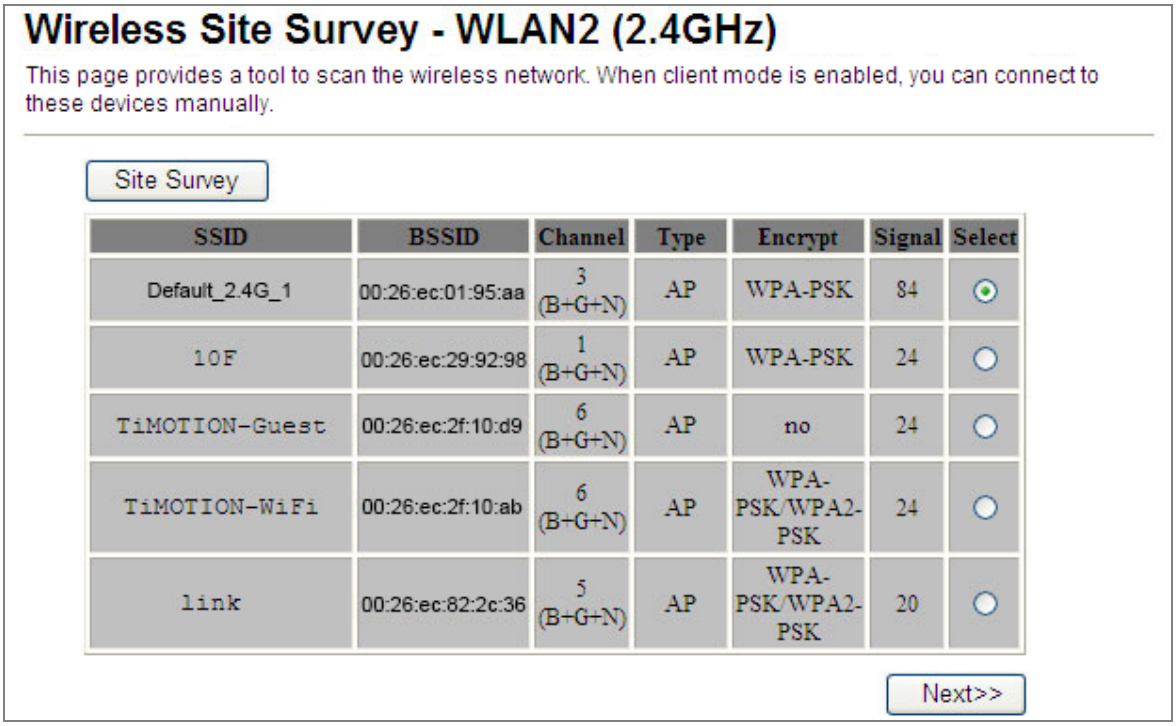


Figure 4-54 Client – AP List

Step 3. Enter the Security Key of the root AP and then click "**Connect**".

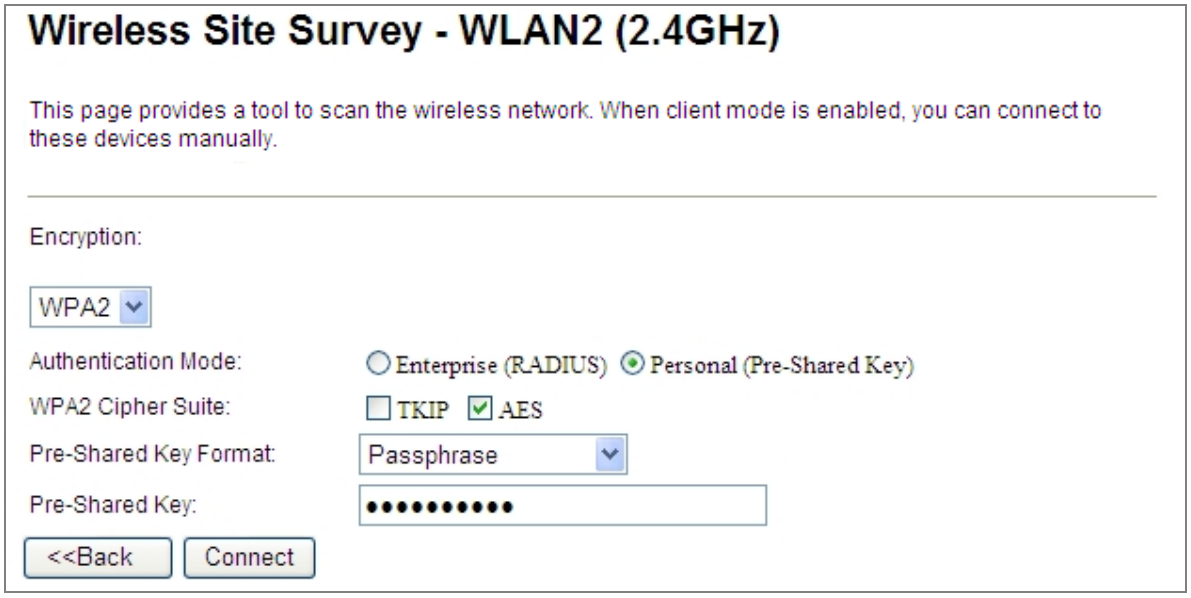


Figure 4-55 Client – Security

Step 4. Wait until the connection established. Check the "**Add to Wireless Profile**" option and then reboot it.

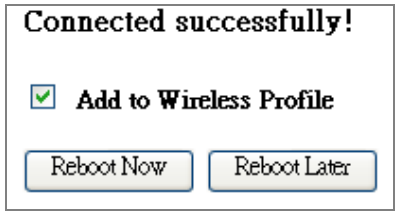


Figure 4-56 Client – Status

■ WDS

Connect this Wireless AP with up to 8 WDS-capable wireless APs to expand the scope of network.

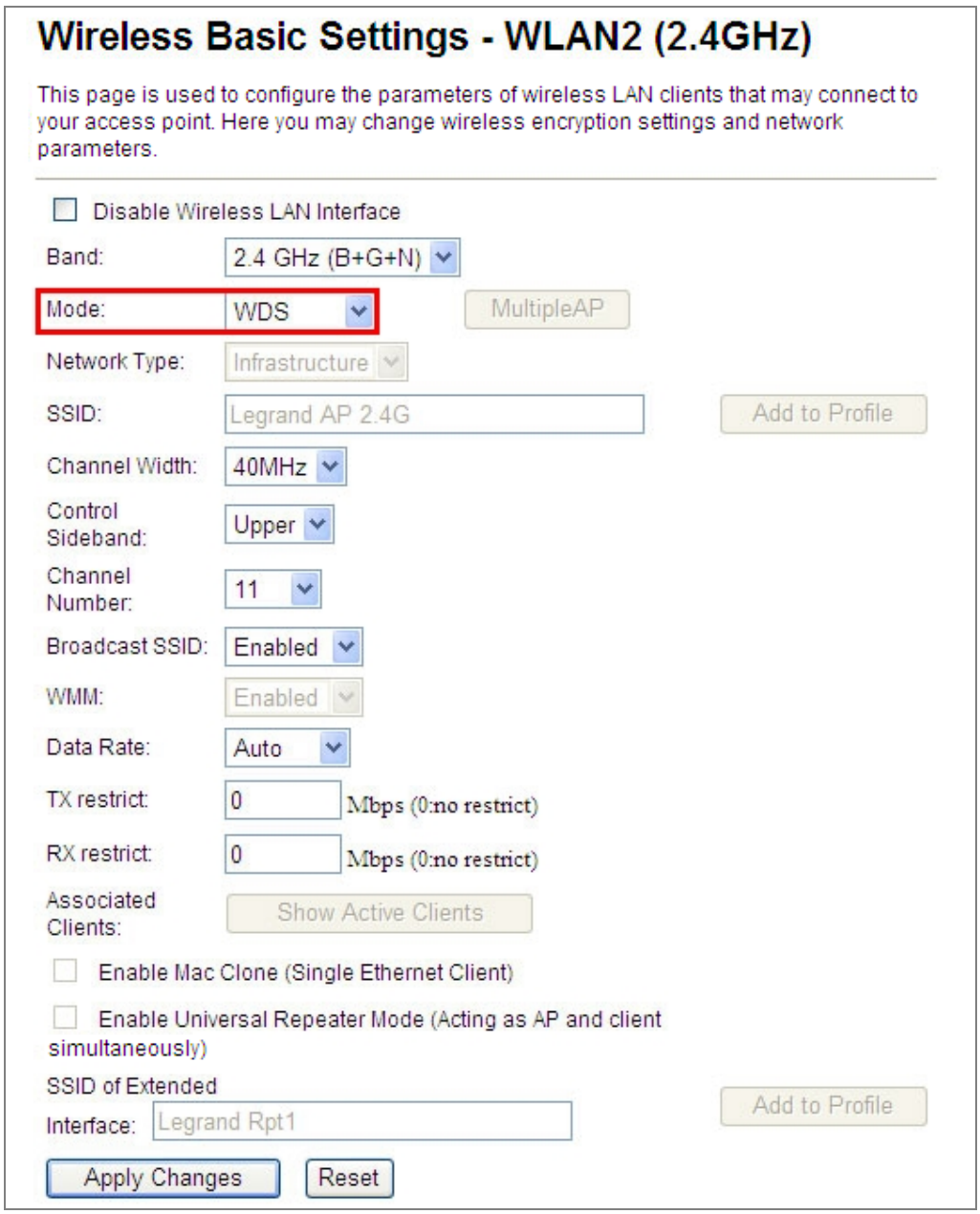


Figure 4-57 2.4GHz Wireless Basic Settings – WDS

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the DA1104. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps

	■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

■ **AP+ WDS**

Connect this Wireless AP with up to 8 WDS-capable wireless APs, and connect another AP to provide service for all wireless stations within its coverage.

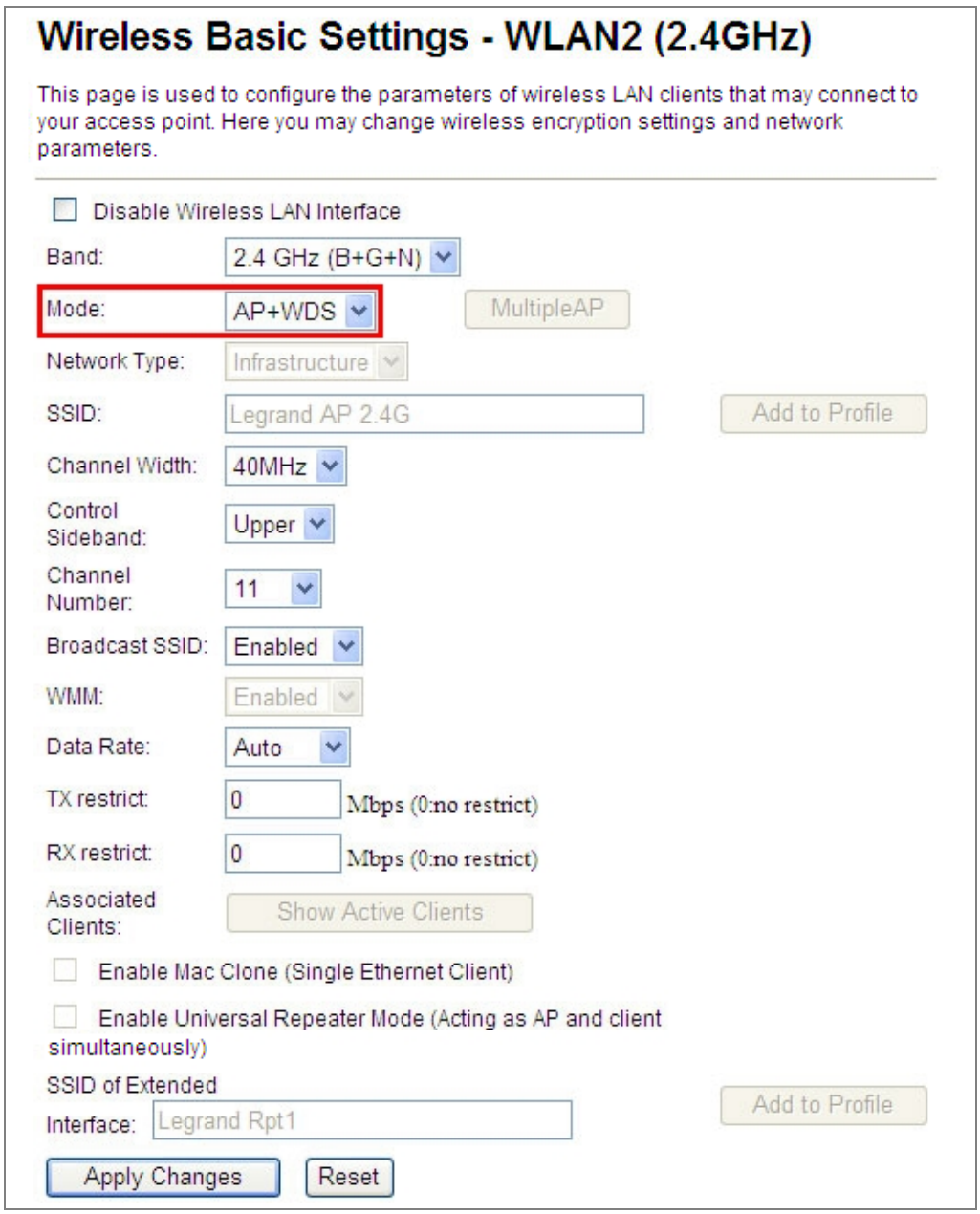


Figure 4-58 2.4GHz Wireless Basic Settings – WDS+AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the DA1104. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R)

	■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default SSID: **Legrand AP 2.4G**
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the DA1104 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode (Acting as AP and client simultaneously)	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater Mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

4.4.2 Advanced Settings

Choose menu "**WLAN2 (2.4GHz)→ Advanced Settings**" to configure the 2.4GHz advanced settings for the wireless network on this page. After the configuration, please click the "Apply" button to save the settings.

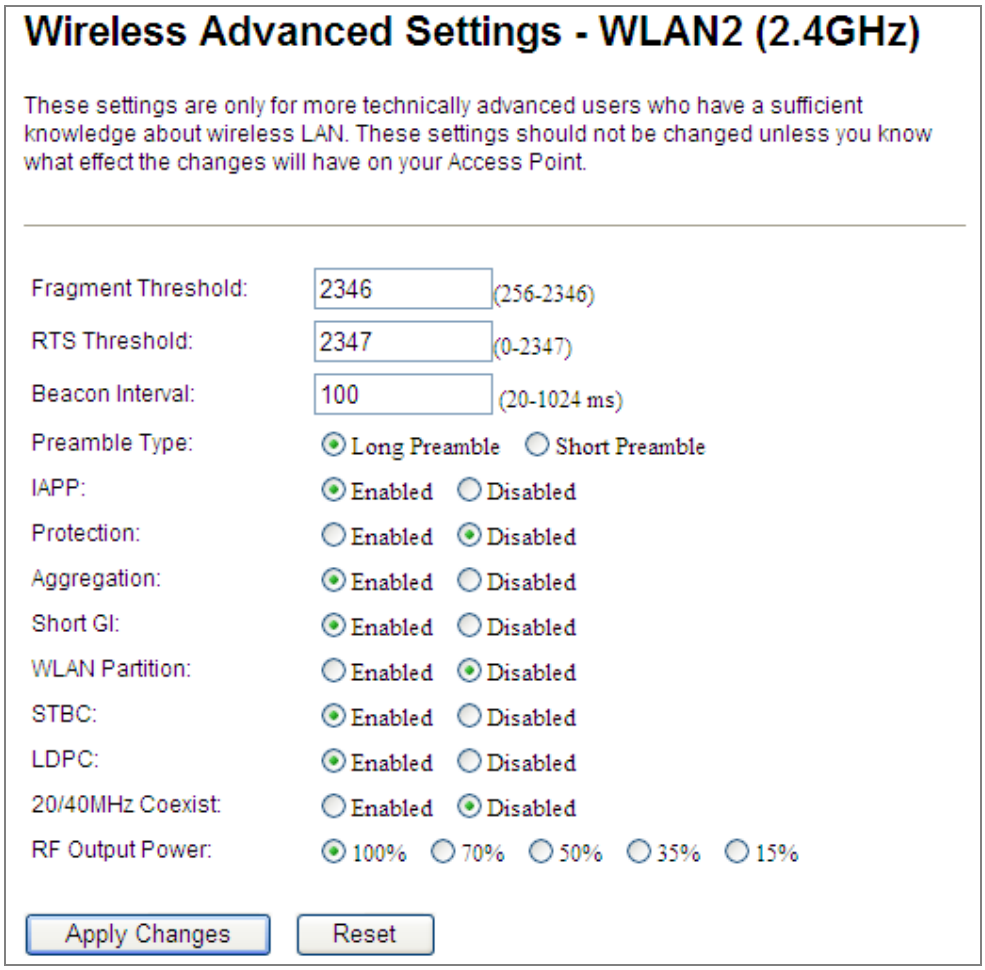


Figure 4-59 Wireless Advanced Settings – 2.4GHz

The page includes the following fields:

Object	Description
Fragment Threshold	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is "2346".
RTS Threshold	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is "2347".
Beacon Interval	The interval of time that this access point broadcasts a beacon. Beacon is used to synchronize the wireless network. Default is "100".
IAPP	**IAPP (Inter-Access Point Protocol)** enabled is recommended as it describes an optional extension to IEEE 802.11 that provides wireless access-point communications among multivendor systems.

	Default is "Enabled".
Protection	When the protection mode is enabled, the throughput of the AP will be a little lower due to the transmission of heavy frame traffic. Default is "Disabled".
Aggregation	It is a function where the values of multiple rows are grouped together. Default is "Enabled"
Short GI	It is used to set the time that the receiver waits for RF reflections to settle out before sampling data. Default is "Enabled"
WLAN Partition	This feature also called "**WLAN isolation**" or "**Block Relay**". If this is enabled, wireless clients cannot exchange data through the DA1104. Default is "Disabled".
STBC	Activate **Space Time Blocking Code (STBC)** which does not need channel statement information (CSI). Default Setting: "Enabled"
LDPC	Low-density Parity-check Code is wireless data transmit algorithm. Default Setting: "Enabled"
20/40MHz Coexist	Configure 20/40MHz coexisting scheme. If you set up as "Enabled", "20MHz" and "40MHz" will coexist. Default Setting: "Disabled"
RF Output Power	The users can adjust the wireless output power here. The setting effects the wireless coverage for users' connectivity both authorized and non-authorized users. Default is "100%".

4.4.3 Security

Choose menu "**WLAN2 (2.4GHz) → Security**" to configure the settings of wireless security for the wireless network on this page. After the configuration, click the "Apply Changes" button to save the settings.

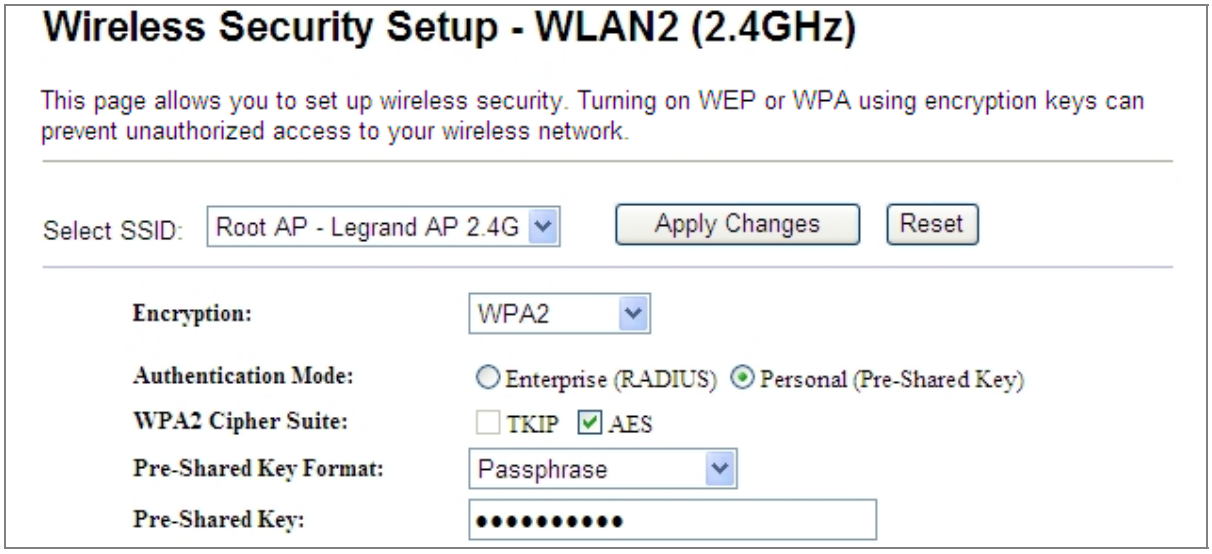


Figure 4-60 Wireless Security Settings – 2.4GHz

The page includes the following fields:

Object	Description
Select SSID	Select the SSID you want to configure the wireless security function, which includes the root one and the client one.
Encryption	**Disable:** No security setup for wireless connection.
	■ **WEP:** It is based on the IEEE 802.11 standard. And the default setting of authentication is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request. Furthermore, you can select **Key Length** and enter 10 and 26 **Hexadecimal** digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 and 13 **ASCII** characters in the **Encryption Key** field.
	■ **WPA:** WPA is a medium level encryption and is supported by most wireless devices and operating systems.
	■ **WPA2:** WPA2 is a high level encryption and is supported by most wireless devices and operating systems.
	■ **WPA / WPA2 / WPA-Mixed:** WPA Mixed Mode allows the use of both WPA and WPA2 at the same time.
Authentication Mode	■ **Enterprise (RADIUS)** When you select the authentication mode based on Enterprise (Radius Server), please enter the **IP Address**, **Port**, and **Password** of the Radius Server.
	■ **Personal (Pre-Shared Key)** When you select the other authentication mode based on Personal (Pre-Shared Key), please enter at least 8 ASCII characters (Passphrase) or 64 Hexadecimal characters. All of the Cipher Suites support **TKIP** and **AES**.
802.1x Authentication	Enable 802.1x authentication function and then enter the **IP Address**, **Port**, and **Password** of the Radius Server.

4.4.4 Access Control

Choose menu "**WLAN2 (2.4GHz) → Access Control**" to allow or deny the computer of specified MAC address to connect with the DA1104. After the configuration, click the "Apply Changes" button to save the settings.

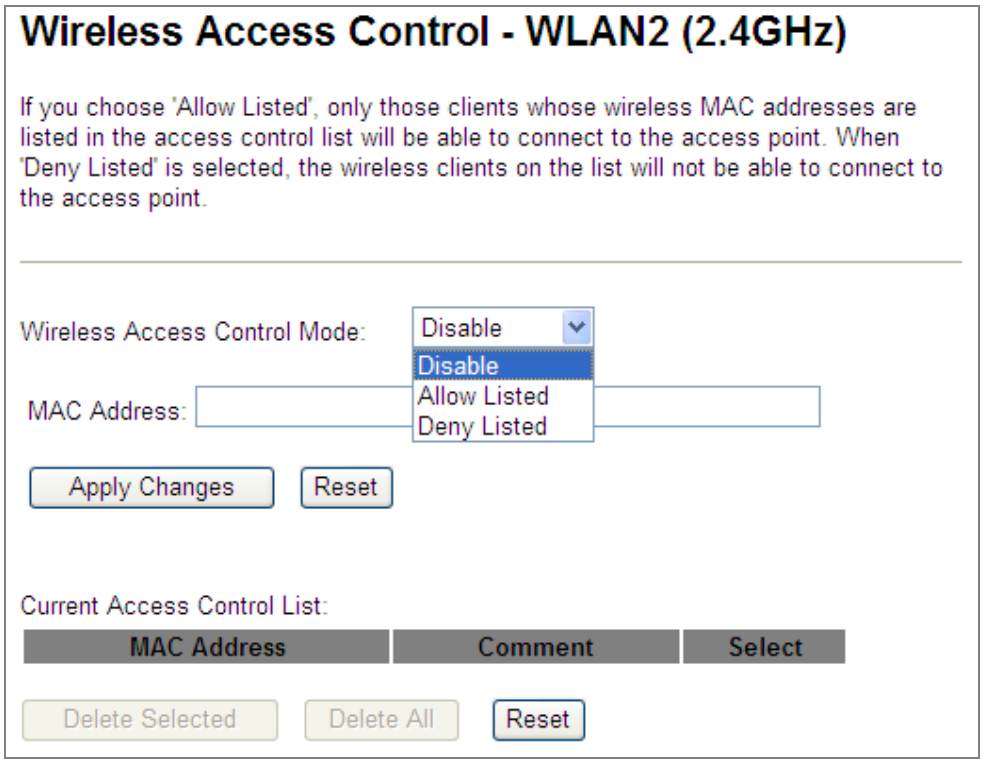


Figure 4-61 Wireless Access Control – 2.4GHz

The page includes the following fields:

Object	Description
Wireless Access Control Mode	You can choose to set the Allow-List, Deny-List, or disable this function.
MAC Address	Enter the MAC address you want to allow or deny connection to the DA1104 in the field.
Comment	You can make some comments on each MAC address on the list.
Current Access Control List	You can select MAC addresses and click "Delete Selected" button to delete it.

■ **Wireless Access Control example:**

To deny a PC at the MAC address of 00:26:EC:00:00:01 to connect to your wireless network, do as follows:

Step 1. Select "**Deny**" from MAC Address Filter drop-down menu.

Step 2. Enter 0026EC000001 in the MAC address box and click "**Add**".

Step 3. Click the "**OK**" button to save your settings and you can add more MAC addresses, if you like, simply repeat the above steps.

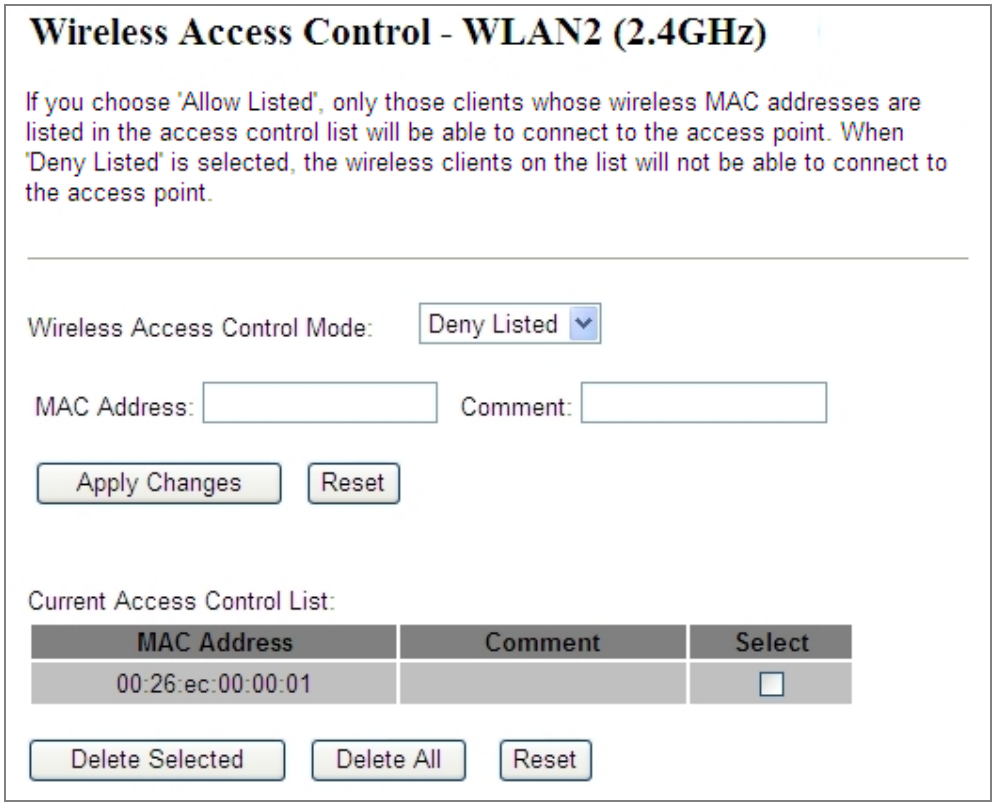


Figure 4-62 Wireless Access Control – Deny

4.4.5 WDS

WDS (Wireless Distribution System) feature can be used to extend your existing 2.4GHz or 5GHz wireless network coverage. Here we present you how to configure this feature in 2.4GHz, which also applies to 5GHz.

Before configuring the WDS Setting page, you have to set the wireless mode to "**WDS**" on the **WLAN2 (2.4GHz)** -> **Basic Settings** web page.

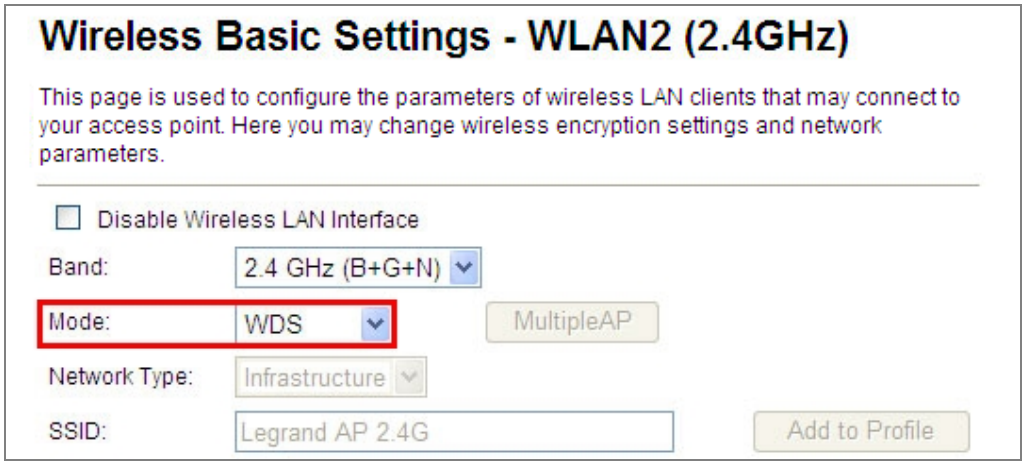


Figure 4-63 WDS Mode – 2.4GHz

Choose menu "**WLAN2 (2.4GHz) → WDS Settings**" to configure WDS to connect the DA1104 with another AP on this page. After the configuration, please click the "**Apply Changes**" button to save the settings.

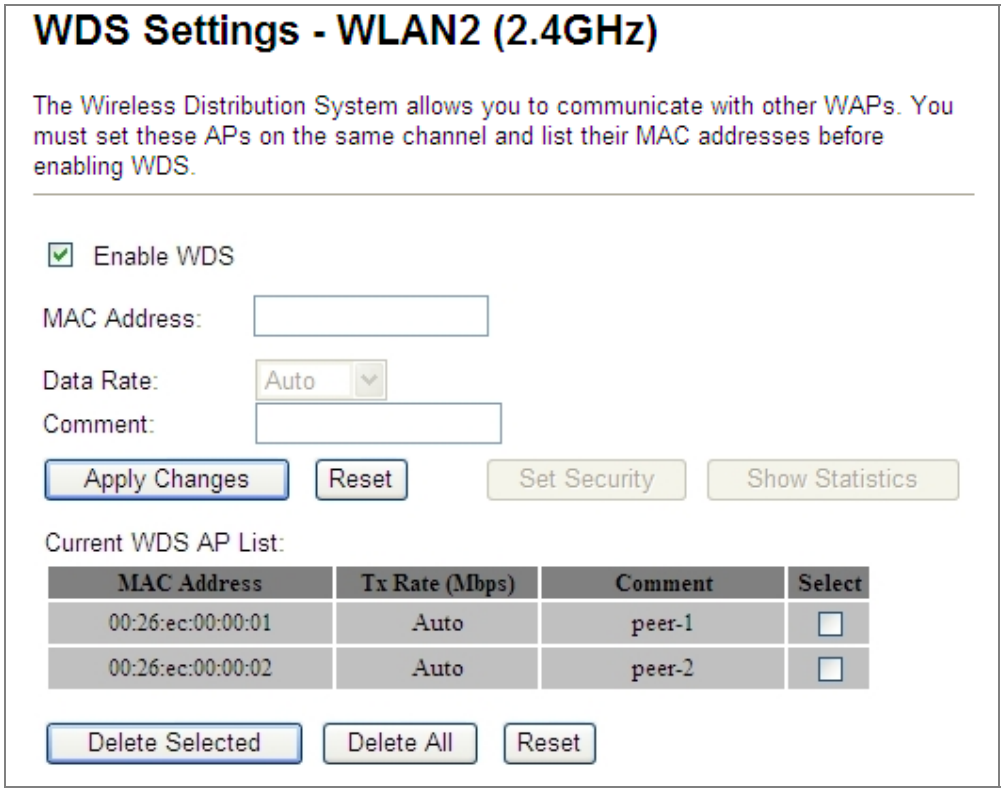


Figure 4-64 WDS Settings – 2.4GHz

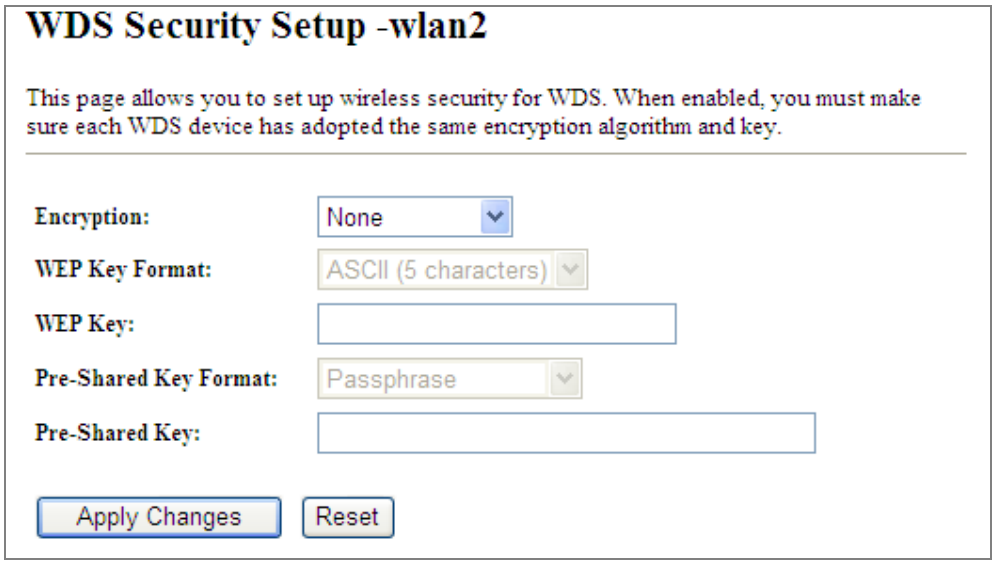


Figure 4-65 WDS – Set Security

The page includes the following fields:

Object	Description
Enable WDS	Check the box to enable the WDS function. Please select **WDS** or **AP+WDS** in the Mode of **Wireless Basic Settings** before you enable WDS on this page.
MAC Address	You can enter the MAC address of the AP you want to connect with.
Data Rate	Default is "**Auto"**.
Comment	You can make some comment for each MAC address on the list.
Set Security	Click the "**Set Security**" button to configure the wireless security parameters of the AP you want to connect via WDS.
Show Statics	Click the "Show Statics" button to show the WDS AP.
Current WDS AP List	You can select some MAC addresses of the AP and click the "Delete Selected" button to delete it.

Note

WDS feature can only be implemented between 2 wireless devices that both support the WDS feature. Plus, **channel**, **security settings** and **security key** must be **the same** on both such devices. Maximum 8 remote peers are supported.

Note

To encrypt your wireless network, click "**Set Security**". For the detail of wireless security, see **section 4.4.4**. Remember to reboot the device after you save your wireless security settings; otherwise, the WDS feature may not function.

4.4.6 Site Survey

Choose menu "**WLAN2 (2.4GHz) → Site Survey**" to scan the available local AP. If any Access Point is found, you can choose any one to connect to it manually when the **Client Mode** is enabled.

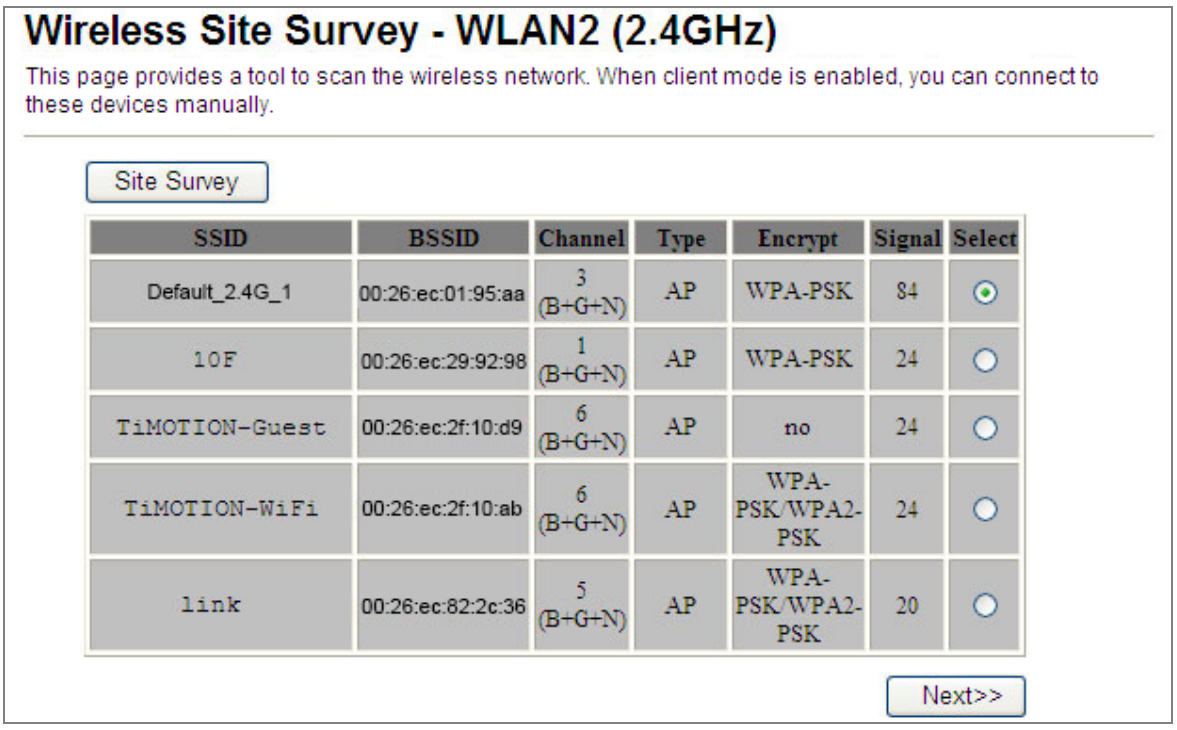


Figure 4-66 Site Survey – 2.4GHz

4.4.7 WPS

WPS (**Wi-Fi Protected Setup**) is designed to ease the setup and management of Wi-Fi security networks. This Wireless Router supports WPS features for **AP mode**, **AP+WDS mode**, **Infrastructure-Client mode**, and the wireless root interface of **Universal Repeater mode**.

Simply enter a PIN code or press the software PBC button to establish a secure wireless connection.

- **PBC:** If you find the WPS LED blinking for 2 minutes after you press the software PBC button, it means that PBC encryption method is successfully enabled. An authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time. If it succeeds, the wireless client device connects to your device and the WPS LED turns off. Repeat the steps mentioned above if you want to connect more wireless client devices to the device.
- **PIN :** To use this option, you must know the PIN code from the wireless client and enter it in the corresponding field on your device while using the same PIN code on the client side for the connection.

The page includes the following fields:

Object	Description
Disable WPS	You can check the box to disable the WPS function.
WPS Status	Here you can check if the connection via WPS is established or not.
Self-PIN Number	It is the PIN number of the DA1104.
Push Button Configuration	Click the "Start PBC" to activate WPS as well in the client device within 2 minutes.
Client PIN Number	In addition to the PBC method, you can also use the PIN method to activate the WPS. Just enter the PIN number of the client device in the field and click the "Start PIN" button.

The WPS encryption can be implemented only between your Router and another WPS-capable device.

➢ Example of how to establish wireless connection using **WPS**. Please take the following steps:

Step 1. Choose menu "**WLAN2 (2.4GHz) → WPS**" to configure the setting for WPS. After the configuration, please click the "Apply Changes" button to save the settings.

Step 2. Add a new device.

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between the wireless adapter and the AP using either Push Button Configuration (PBC) or PIN methods.

To build a successful connection by WPS, you should configure the corresponding new device for WPS function.

A. By Software Push Button Configuration (PBC)

i. Click the "Start PBC" Button on the WPS page of the AP.

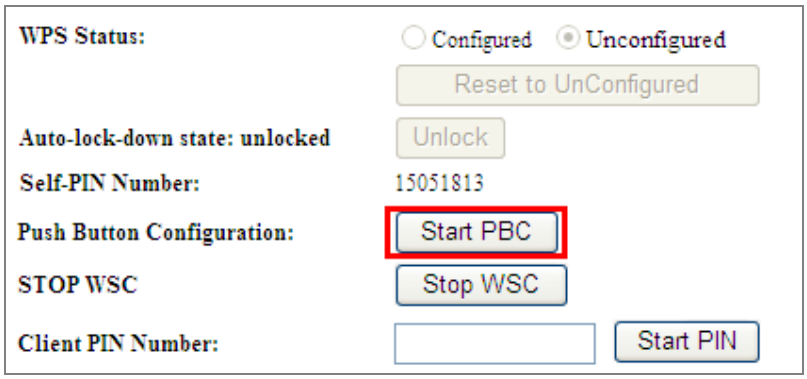


Figure 4-67 WPS-PBC – 2.4GHz-1

Figure 4-68 WPS-PBC – 2.4GHz-2

ii. The process must be finished within 2 minutes.

iii. Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

B. By PIN

If the new device supports Wi-Fi Protected Setup and the PIN method, you can add it to the network by PIN with the following two methods.

Method One: Enter the PIN of your wireless adapter into the configuration utility of the AP

i. Enter the PIN code of the wireless adapter in the field behind **Client PIN Number** in the following figure and then click **Start PIN**.

The PIN code of the adapter is always displayed on the WPS configuration screen.

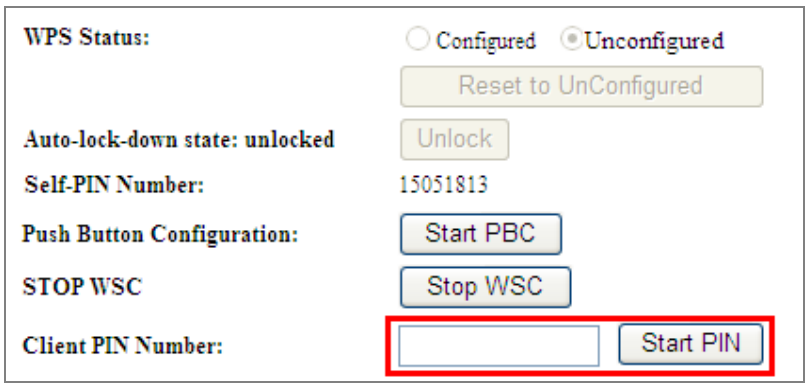


Figure 4-69 WPS-PIN – 2.4GHz-1

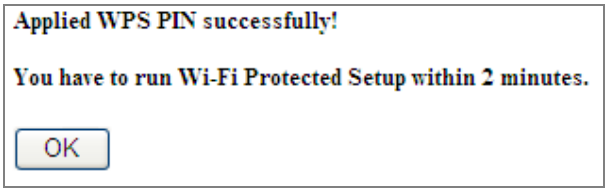


Figure 4-70 WPS-PIN – 2.4GHz-2

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter PIN into the AP (Enrollee)** in the configuration utility of the WPS and click **Next** until the process finishes.

Method Two: Enter the PIN of the AP into the configuration utility of your wireless adapter

i. Click the "Start PBC" Button on the WPS page of the AP. Get the current PIN code of the AP on the WPS page (each AP has its unique PIN code).

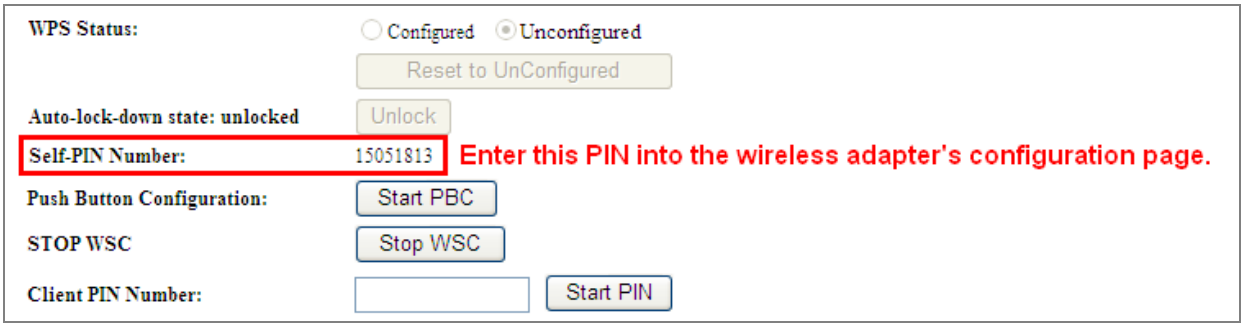


Figure 4-71 WPS-PIN – 2.4GHz-3

ii. For the configuration of the wireless adapter, choose the option that you want to **enter the PIN of the AP (Registrar)** in the configuration utility of the wireless adapter and enter it into the field. Then click **Next** until the process finishes.

4.4.8 Schedule

Wireless Schedules will enable or disable your wireless access at a set time based on your predefined schedule. This feature is often used for restricting access to all users (such as children, employees and guests) during specific times of the day for parental control or security reasons.

Choose menu "**WLAN2 (2.4GHz) → Schedule**" to configure the schedule rule of enabling wireless function. After the configuration, please click the "Apply Changes" button to save the settings.

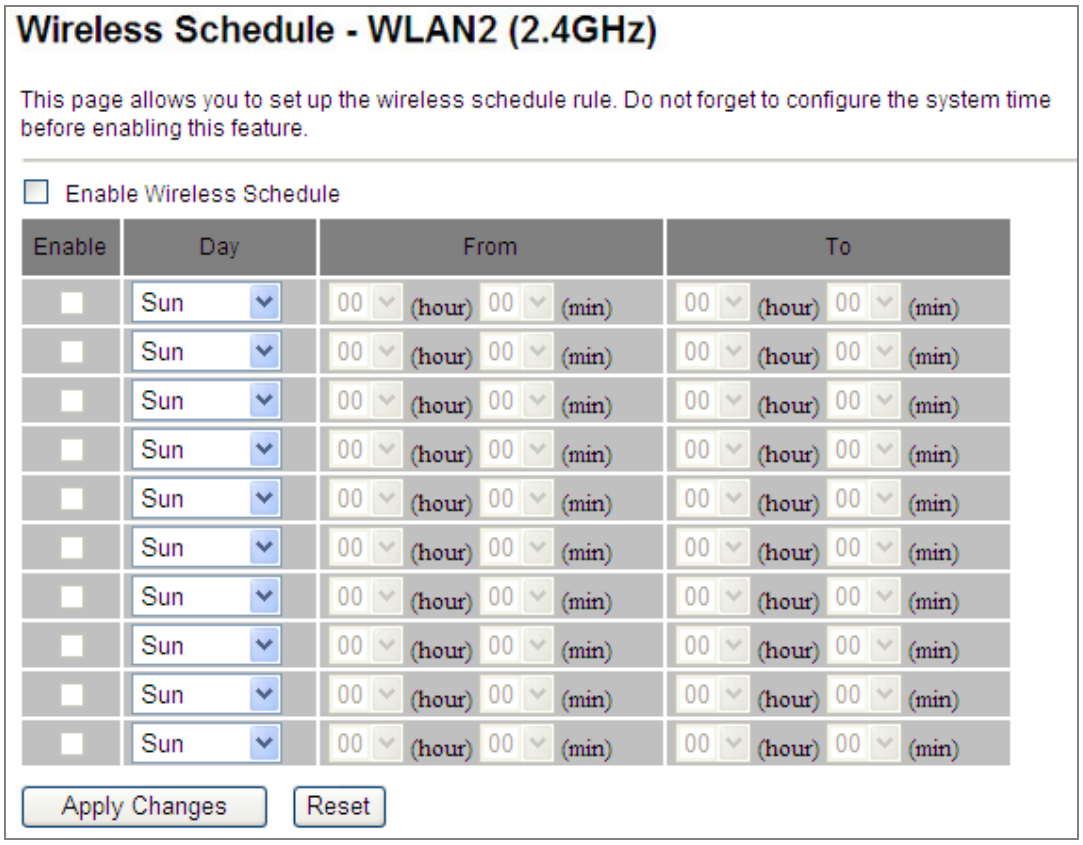


Figure 4-72 Schedule – 2.4GHz

When setting the Wireless Schedule, it is important to ensure that your **System Clock** settings have been configured. If not, your Wireless Schedule will not function correctly.

4.5 Management

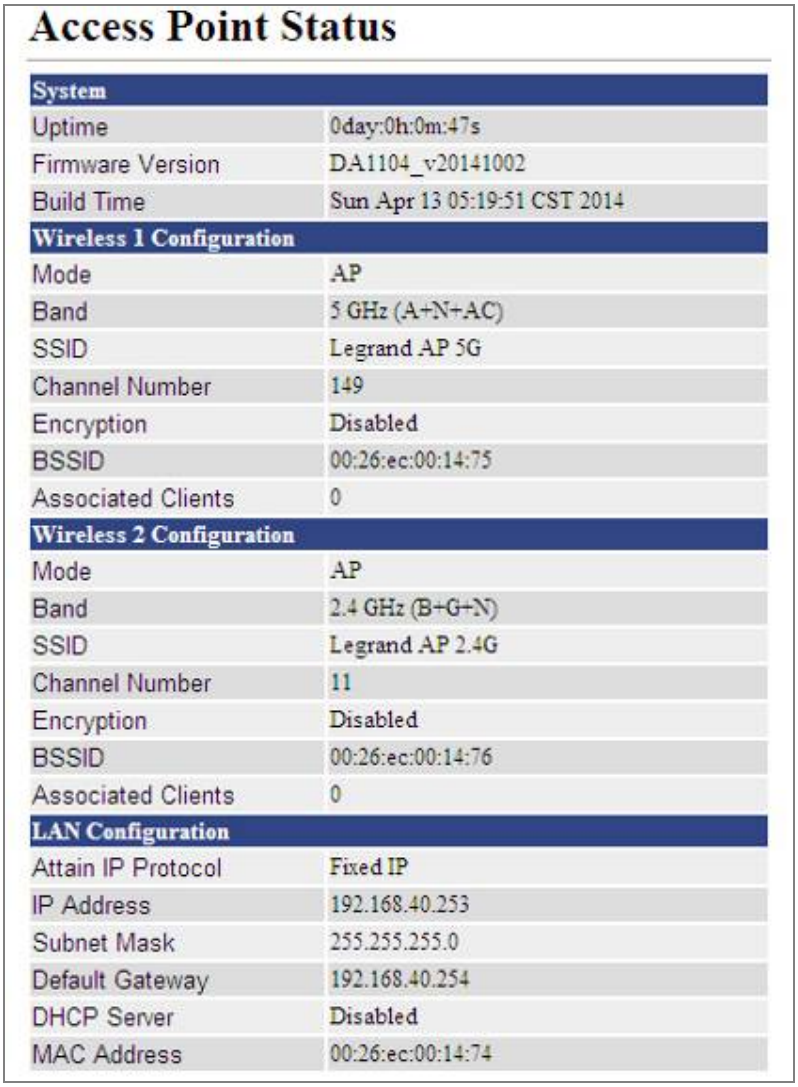
This section focuses on how to maintain the AP, including Restore to Factory Default Setting, Backup/Restore, Firmware Upgrade, Reboot, Password Change and Syslog.

Figure 4-73 Management – Main Menu

4.5.1 Status

You can use this function to display instantaneous information about the wireless access point. The information displayed here may vary depending on the configuration.

Choose menu "**Management → Status**" to show the current status and some basic settings of the DA1104.



Access Point Status

System	
Uptime	0day:0h:0m:47s
Firmware Version	DA1104_v20141002
Build Time	Sun Apr 13 05:19:51 CST 2014
Wireless 1 Configuration	
Mode	AP
Band	5 GHz (A+N+AC)
SSID	Legrand AP 5G
Channel Number	149
Encryption	Disabled
BSSID	00:26:ec:00:14:75
Associated Clients	0
Wireless 2 Configuration	
Mode	AP
Band	2.4 GHz (B+G+N)
SSID	Legrand AP 2.4G
Channel Number	11
Encryption	Disabled
BSSID	00:26:ec:00:14:76
Associated Clients	0
LAN Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.40.253
Subnet Mask	255.255.255.0
Default Gateway	192.168.40.254
DHCP Server	Disabled
MAC Address	00:26:ec:00:14:74

Figure 4-74 Status

4.5.2 Statistics

Choose menu "**Management → Statistics**" to show the packet counters for transmission and reception regarding wireless and Ethernet network.

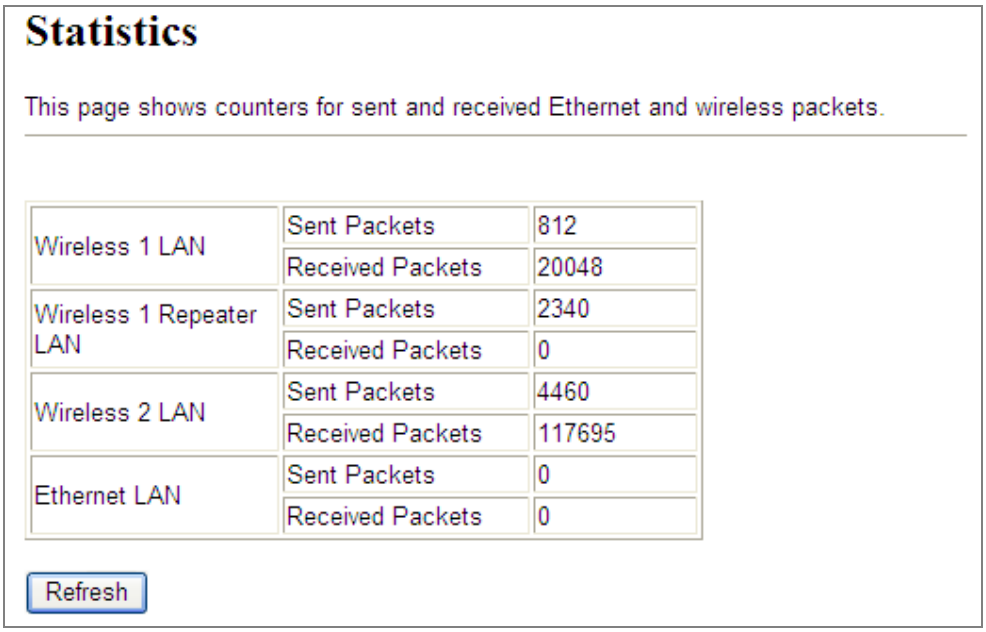


Figure 4-75 Statistics

The page includes the following fields:

Object	Description
Wireless LAN ***Sent Packets***	It shows the statistical count of sent packets on the wireless LAN interface.
Wireless LAN ***Received Packets***	It shows the statistical count of received packets on the wireless LAN interface.
Ethernet WAN ***Sent Packets***	It shows the statistical count of sent packets on the Ethernet WAN interface.
Ethernet WAN ***Received Packets***	It shows the statistical count of received packets on the Ethernet WAN interface.
Refresh	Click the refresh the statistic counters on the screen.

4.5.3 SNMP

Choose menu "**Management → SNMP**" to allow the network management station to retrieve statistics and status from the SNMP agent in this AP. Simple Network Management Protocol (SNMP) is a popular network monitoring and management protocol, used to refer to a collection of specifications for network management that includes the protocol itself.

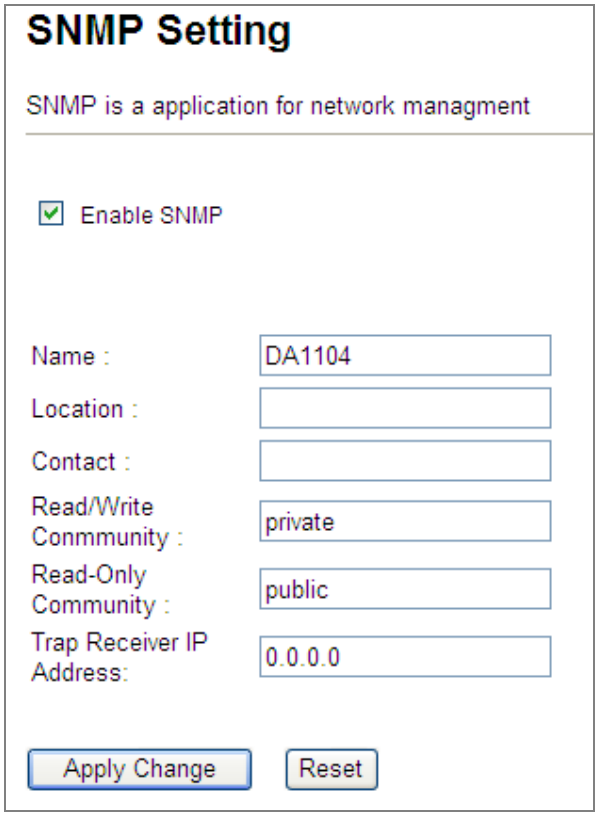


Figure 4-76 SNMP

The page includes the following fields:

Object	Description
Enable SNMP	To enable the SNMP feature.
Name	The name of the AP for SNMP management.
Location	The location of the AP for SNMP management.
Contact	The contact person for the AP in case for SNMP management purpose.
Read/Write Community	The community name for SNMP management.
Read-Only Community	The community name for SNMP management.
Trap Receiver IP Address	The IP address of SNMP Trap Server.

4.5.4 NTP Settings

This section assists you in setting the Wireless AP's system time. You can either set the time and date manually or automatically obtain the time from the Internet.

Choose menu "**Management → NTP Settings**" to configure the system time. You can also maintain the system time by synchronizing with a public time server over the Internet. After the configuration, please click the "**OK**" button to save the settings.

Note

The configured time and date settings are lost when the Wireless AP is powered off.

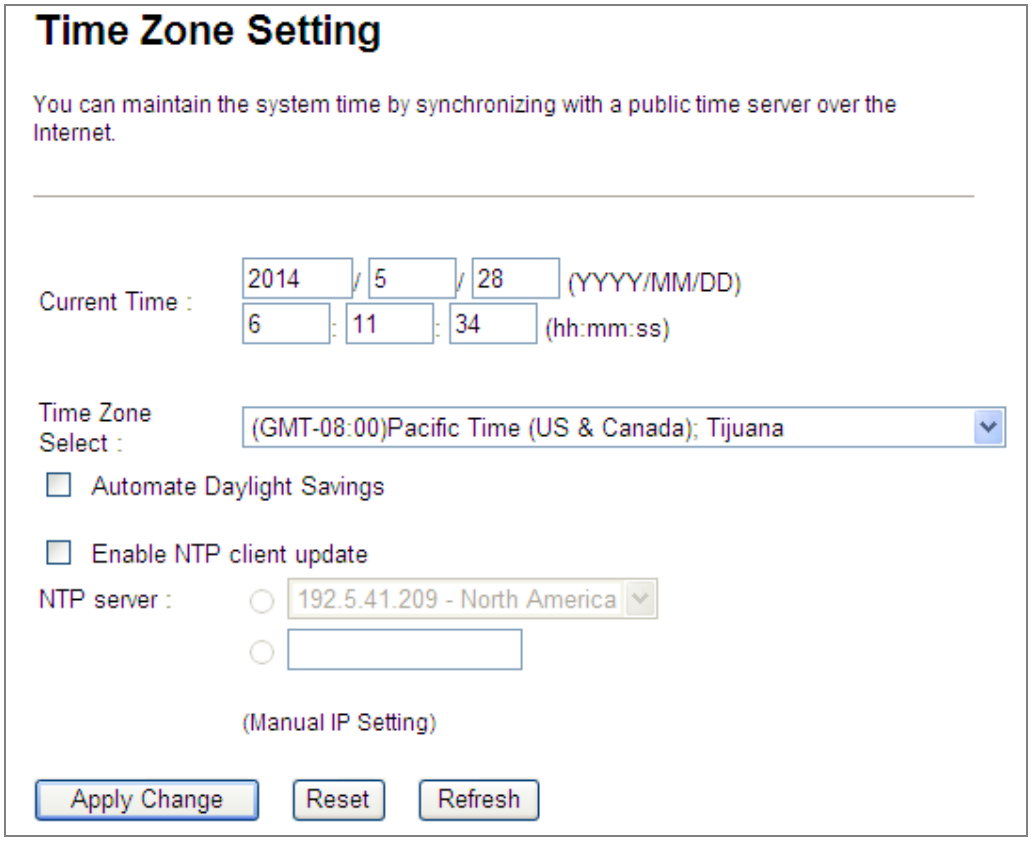


Figure 4-77 Time Zone Settings

The page includes the following fields:

Object	Description
Current Time	Input current time manually. You can click "**Copy Computer Time**" button to copy the PC's current time to the AP.
Time Zone Select	Select the time zone of the country you are currently in. The router will set its time based on your selection.
Automatically Adjust Daylight Saving	Select if your location observes daylight savings time.
Enable NTP client update	Check to enable NTP update. Once this function is enabled, AP will automatically update current time from NTP server.
NTP Server	User may select prefer NTP sever or input address of NTP server manually.

If the AP loses power for any reason, it cannot keep its clock running, and will not have the correct time when it is started again. To maintain correct time for schedules and logs, either you must enter the correct time after you restart the AP, or you must enable the NTP Server option.

4.5.5 Schedule Reboot

This page allows you to enable and configure system reboot schedule. The device can regularly reboot according to the reserved time when connecting to the Internet.

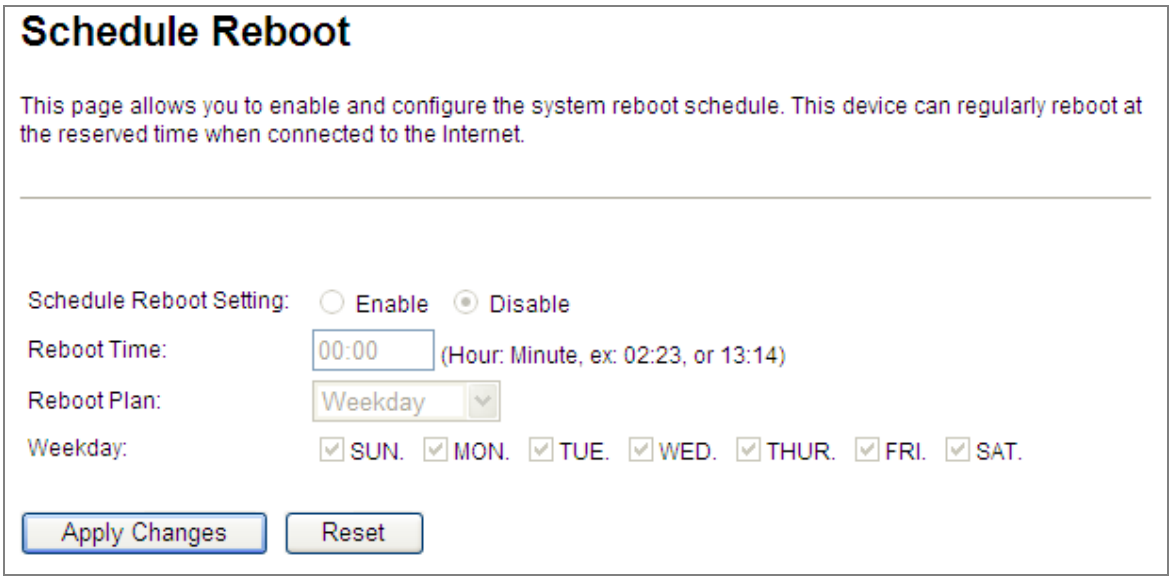


Figure 4-78 Schedule Reboot

The page includes the following fields:

Object	Description
Schedule Reboot Setting	Enable or disable the Schedule Reboot function.
Reboot Time	Enter the Reboot Time (24-hour format) to enable this function to take effect.
Reboot Plan	There are two Reboot Plans supported in the AP: **Weekday:** select this option to let the device reboot automatically according to the reserved time in one or more days of a week. **Every day:** select this option to let the device reboot automatically according to the reserved time every day.
Weekday	Check one or more days to let the device auto reboot on schedule. When choosing "Every day" as your reboot plan, the "Weekday" will be grayed out (disabled).

■ Example of how to configure **Schedule Reboot**. Please take the following steps:

Before configured schedule reboots, please ensure the Internet connection is accessible and the GMT time is configured correctly according to **NTP Settings** page.

Step 1. Select the Schedule Reboot Setting checkbox.

Step 2. Enter the Reboot Time (24-hour format) to enable this function to take effect. For example, if you want this function to work at 23:00 every Sunday, choose "Weekday" in the Reboot Plan field.

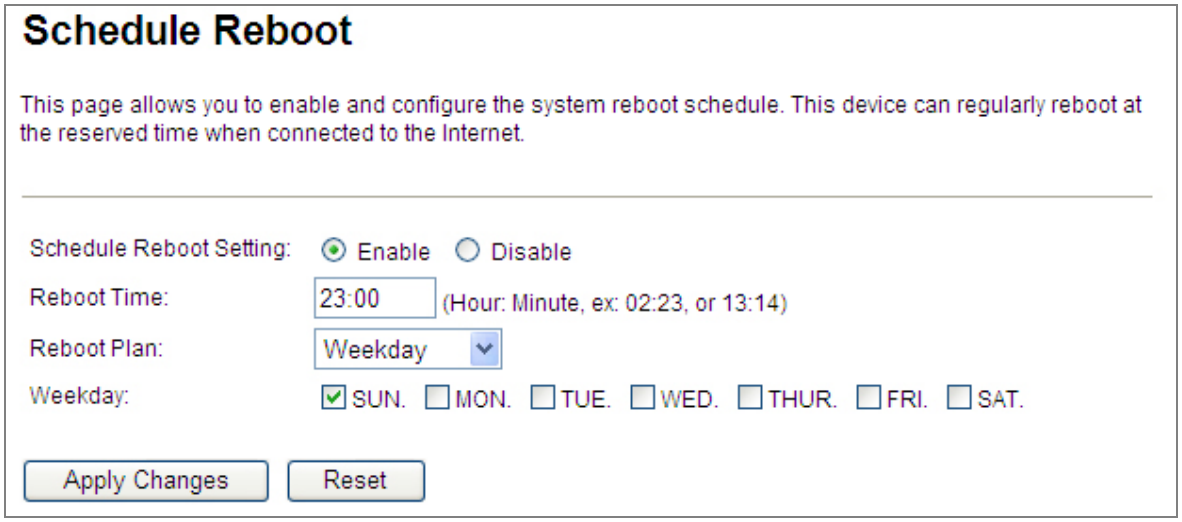


Figure 4-79 Schedule Reboot - Example

Step 3. Click the "Apply Changes" button to take this function effect.

4.5.6 LOG

Choose menu "**Management → LOG**" to configure the settings of system log. You can check the box of the items you want to record it in the log. After the configuration, click the "Apply" button to save the settings.

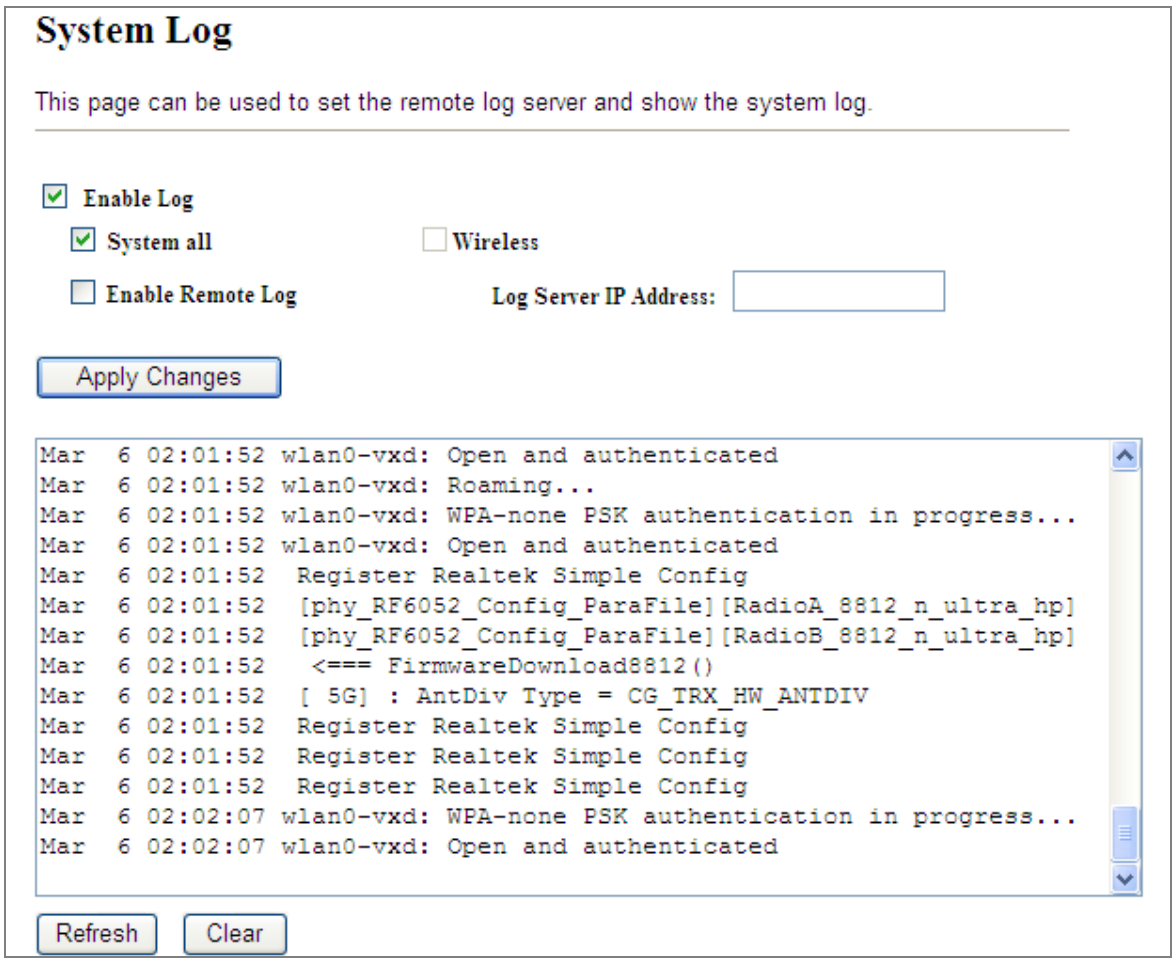


Figure 4-80 System Log

The page includes the following fields:

Object	Description
Enable Log	Check to enable log function.
System all	Check this option to display all the system logs.
Wireless	Check this option to display only the logs related to wireless module.
Enable Remote Log	Enable this option if you have a syslog server currently running on the LAN and wish to send log messages to it.
Log Server IP Address	Enter the LAN IP address of the syslog server.
Refresh	Click this button to update the log.
Clear	Click this button to clear the current log.

4.5.7 Upgrade Firmware

This page allows you upgrade the Access Point firmware to new version. Do not power off the device during the upload because it may crash the system.

Choose menu "**Management → Upgrade Firmware**" to upgrade the firmware of the DA1104. Select the new firmware file downloaded from the LEGRAND website and then click "**Upload**" button to upgrade it.

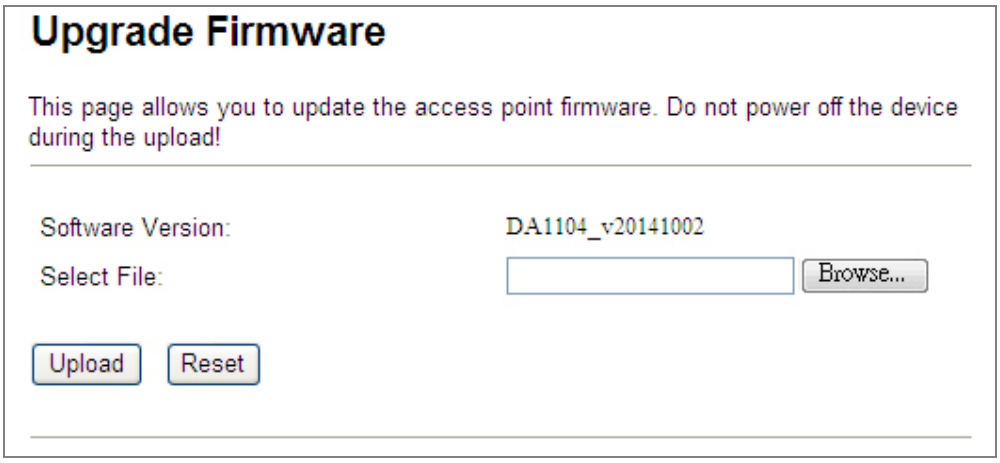


Figure 4-81 Upgrade Firmware

The page includes the following fields:

Object	Description
Select File	Browse and select the file you want to upgrade and press Upload to perform upgrade. **Please wait till the related information is shown on the screen after upgrade is finished.**

Note

Do not disconnect the Wireless AP from your management PC (the PC you use to configure the device) or power it off during the upgrade process; otherwise, it may be permanently damaged. The Wireless AP will restart automatically when the upgrade process completes.

4.5.8 Reload Settings

Choose menu "**Management → Reload Settings**" to back up or reset the configuration of the DA1104.

Once you have configured the Wireless AP the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your Wireless AP in case the device is restored to factory default settings.

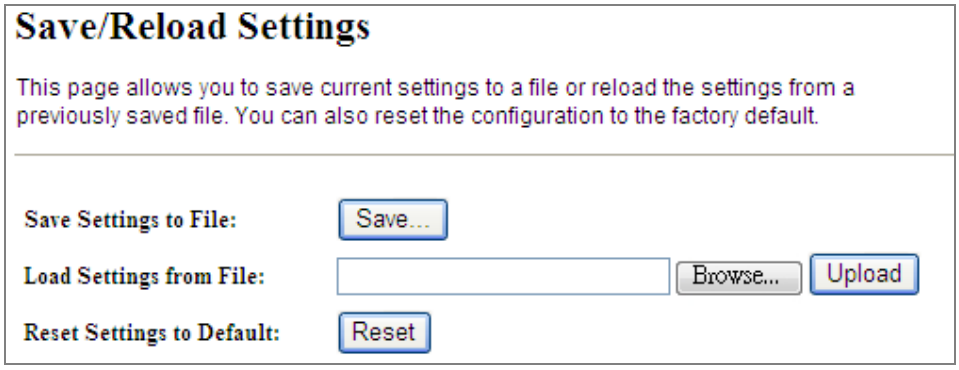


Figure 4-82 Save/Reload Settings

The page includes the following fields:

Object	Description
Save Settings to File	Click the "**Save…**" button to back up the configuration of the DA1104 and then save the "config.dat" in your computer.
Load Settings from File	Select the configuration file of the DA1104 and then click the "**Upload**" button to reload the configuration back into the DA1104.
Reset Settings to Default	Click the "**Reset**" button to reset all settings of the DA1104 to factory default. **Factory Default Settings:** User Name: **admin** Password: **admin** IP Address: **192.168.40.253** Subnet Mask: **255.255.255.0** Default Gateway: **192.168.40.254** DHCP: **Disabled** 5GHz SSID: **Legrand AP 5G** 2.4GHz SSID: **Legrand AP 2.4G** Wireless Security: **None**

Note

To activate your settings, you need to reboot the Wireless AP after you reset it.

4.5.9 Password

To ensure the Wireless AP's security, you will be asked for your password when you access the Wireless AP's web-based utility. The default user name and password are "admin". This page will allow you to add or modify the user name and password.

Choose menu "**Management → User Management**" to change the user name and password which is inputted to access the web UI of the DA1104.

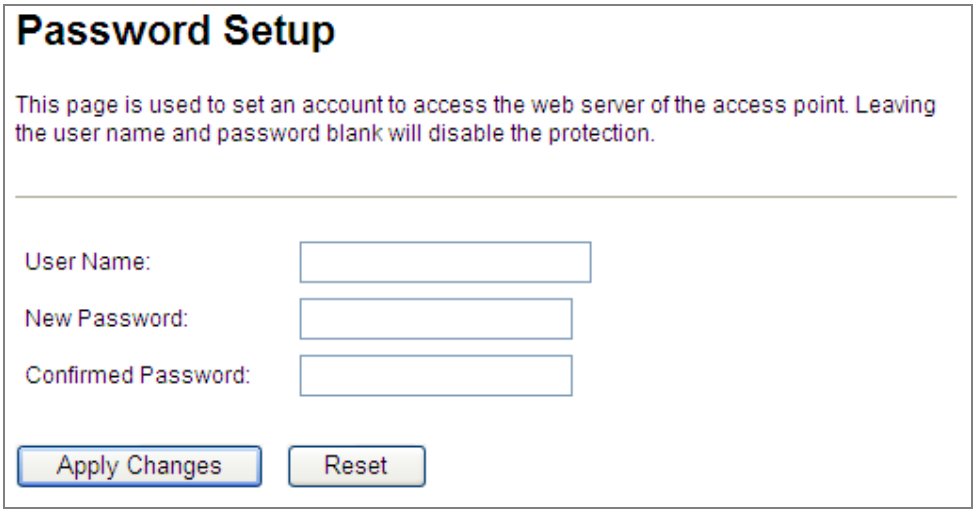


Figure 4-83 Password Setup

The page includes the following fields:

Object	Description
User Name	Enter user name.
New Password	Input password for this user.
Confirmed Password	Confirm password again.

Note

For the sake of security, it is highly recommended that you change the default login password and user name.

4.5.10 Logout

To logout the DA1104, please select "**Logout**" from the left-side menu.

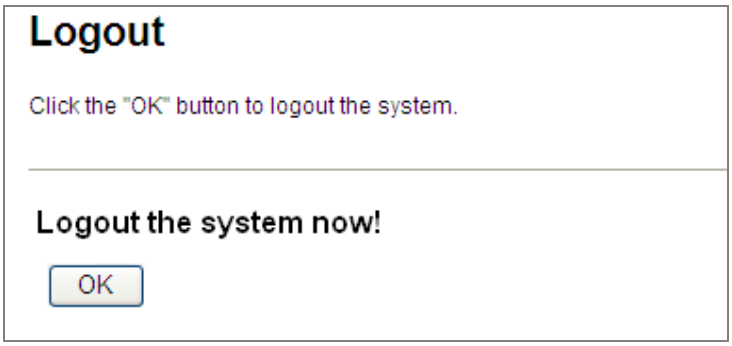


Figure 4-84 Logout

4.5.11 Reboot

To reboot the DA1104, please select "**Reboot**" from the left-side menu.

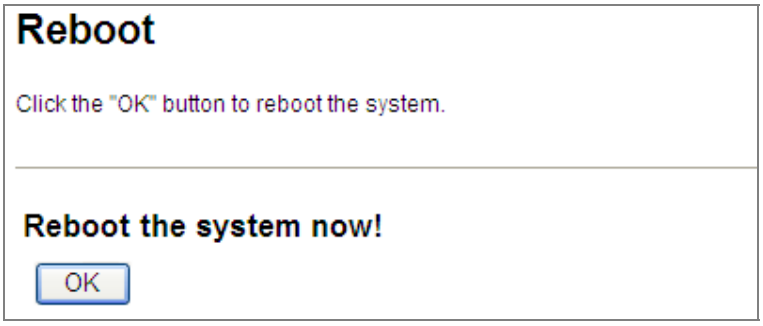


Figure 4-85 Reboot

Chapter 5. Quick Connection to a Wireless Network

In the following sections, the **default SSID** of the DA1104 is configured to "**default**".

5.1 Windows XP (Wireless Zero Configuration)

Step 1: Right-click on the **wireless network icon** displayed in the system tray

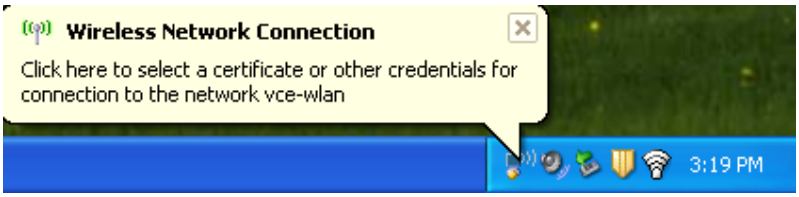


Figure 5-1 System Tray – Wireless Network Icon

Step 2: Select [**View Available Wireless Networks**]

Step 3: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [default]

(2) Click the [**Connect**] button

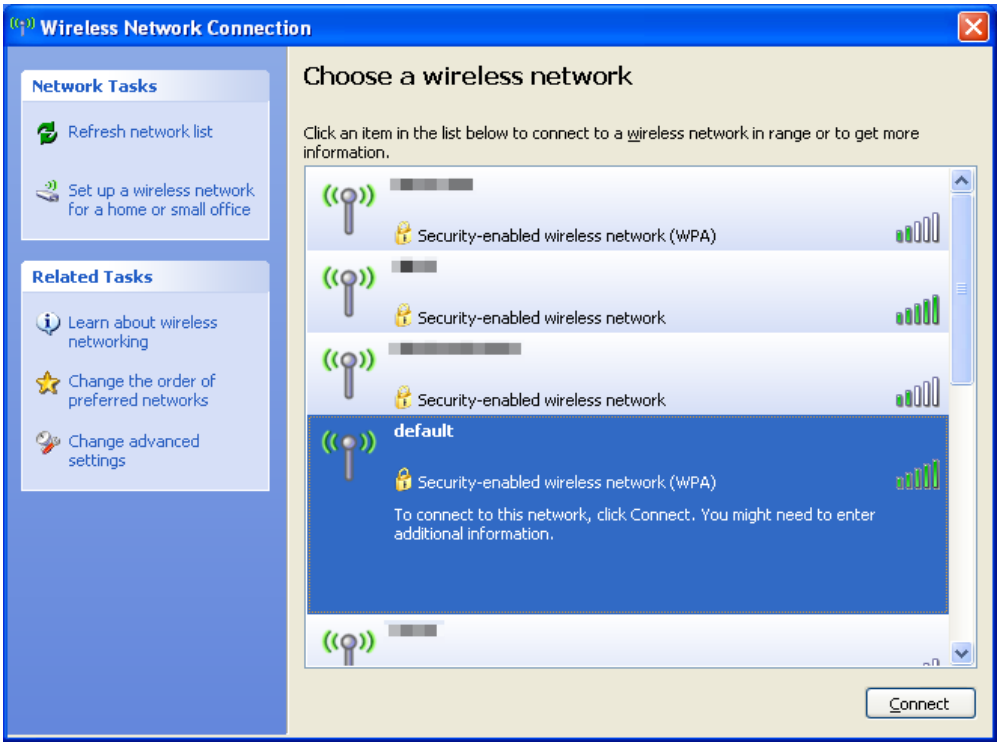


Figure 5-2 Choose a wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Wireless Network Connection box will appear

(2) Enter the encryption key that is configured in section 4.3.4

(3) Click the [Connect] button

Figure 5-3 Enter the network key

Step 5: Check if "**Connected**" is displayed

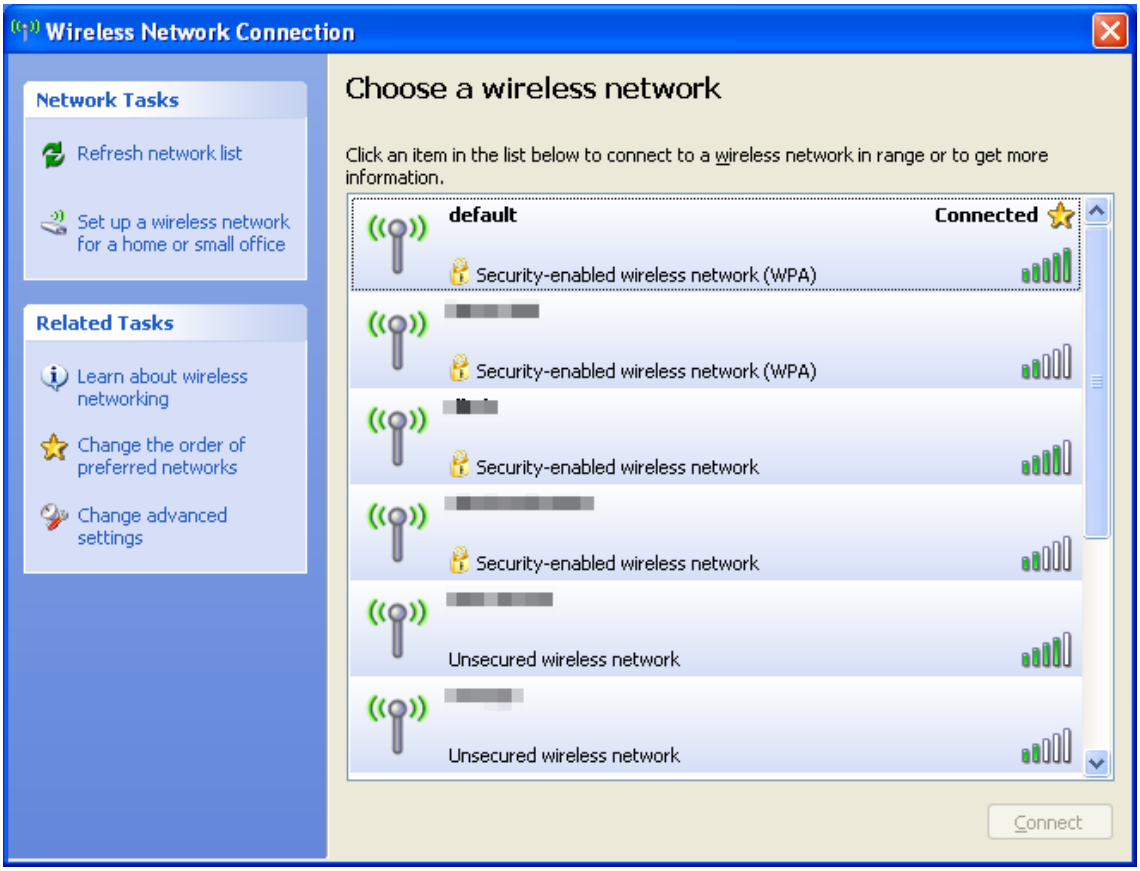


Figure 5-4 Choose a wireless network -- Connected

Note

Some laptops are equipped with a "Wireless ON/OFF" switch for the internal wireless LAN. Make sure the hardware wireless switch is switched to "ON" position.

5.2 Windows 7 (WLAN AutoConfig)

WLAN AutoConfig service is built in to Windows 7 to detect and connect to wireless networks. This built-in wireless network connection tool is similar to the wireless zero configuration tool in Windows XP.

Step 1: Right-click on the **network icon** displayed in the system tray

Figure 5-5 Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [**default**]

(2) Click the [**Connect**] button

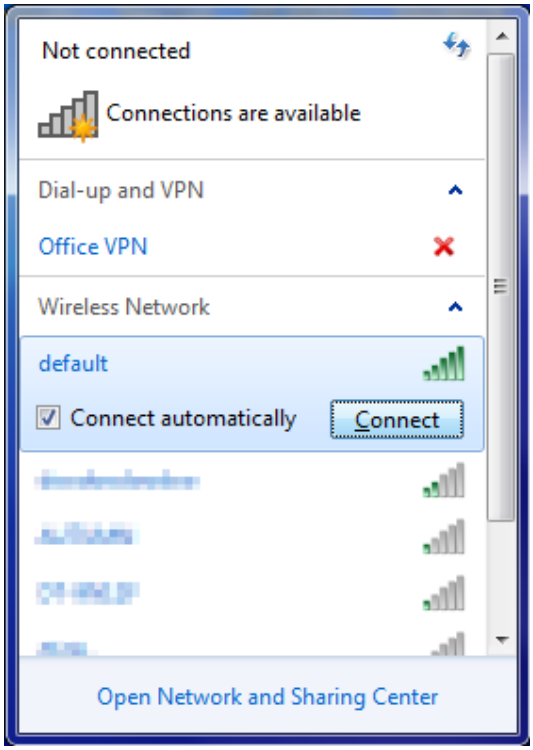


Figure 5-6 WLAN AutoConfig

Note

If you will be connecting to this Wireless AP in the future, check [**Connect automatically**].

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Connect to a Network box will appear

(2) Enter the encryption key that is configured in section 4.3.4

(3) Click the [OK] button

Figure 5-7 Type the network key

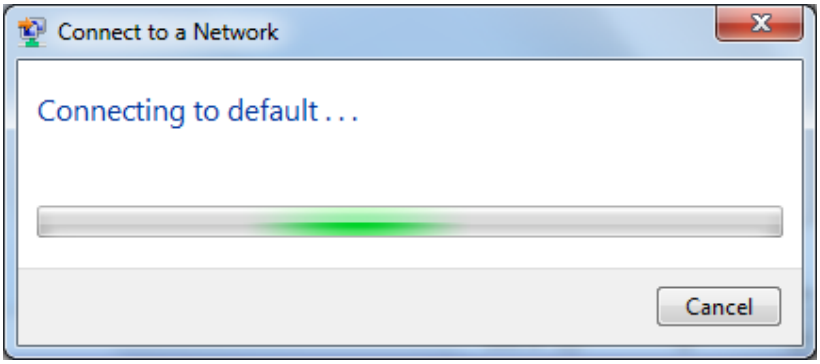


Figure 5-8 Connecting to a Network

Step 5: Check if "**Connected**" is displayed

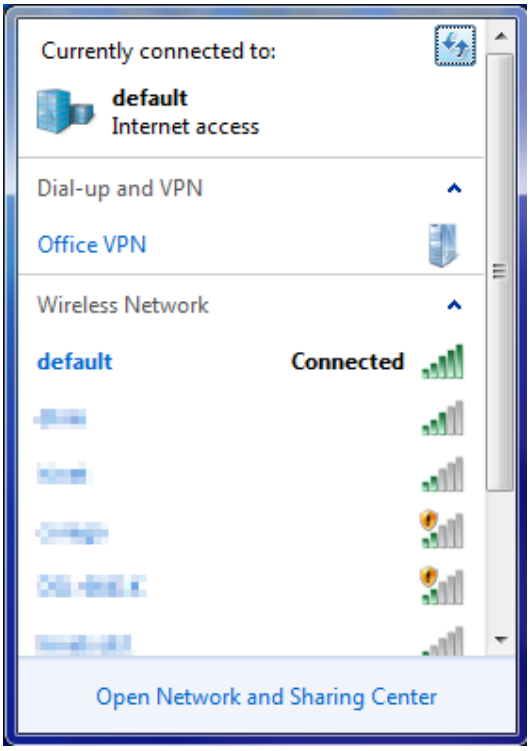


Figure 5-9 Connected to a Network

5.3 Mac OS X 10.x

In the following sections, the default SSID of the DA1104 is configured to "default".

Step 1: Right-click on the **network icon** displayed in the system tray

The AirPort Network Connection menu will appear

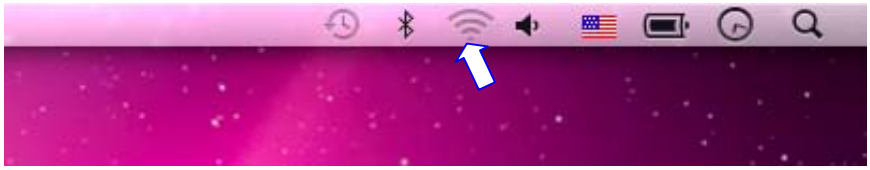


Figure 5-10 Mac OS – Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select and SSID [**default**]

(2) Double-click on the selected SSID

Figure 5-11 Highlight and select the wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) Enter the encryption key that is configured in section 4.3.4

(2) Click the [OK] button

Figure 5-12 Enter the Password

Note

If you will be connecting to this Wireless AP in the future, check [**Remember this network**].

Step 5: Check if the AirPort is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in the front of the SSID.

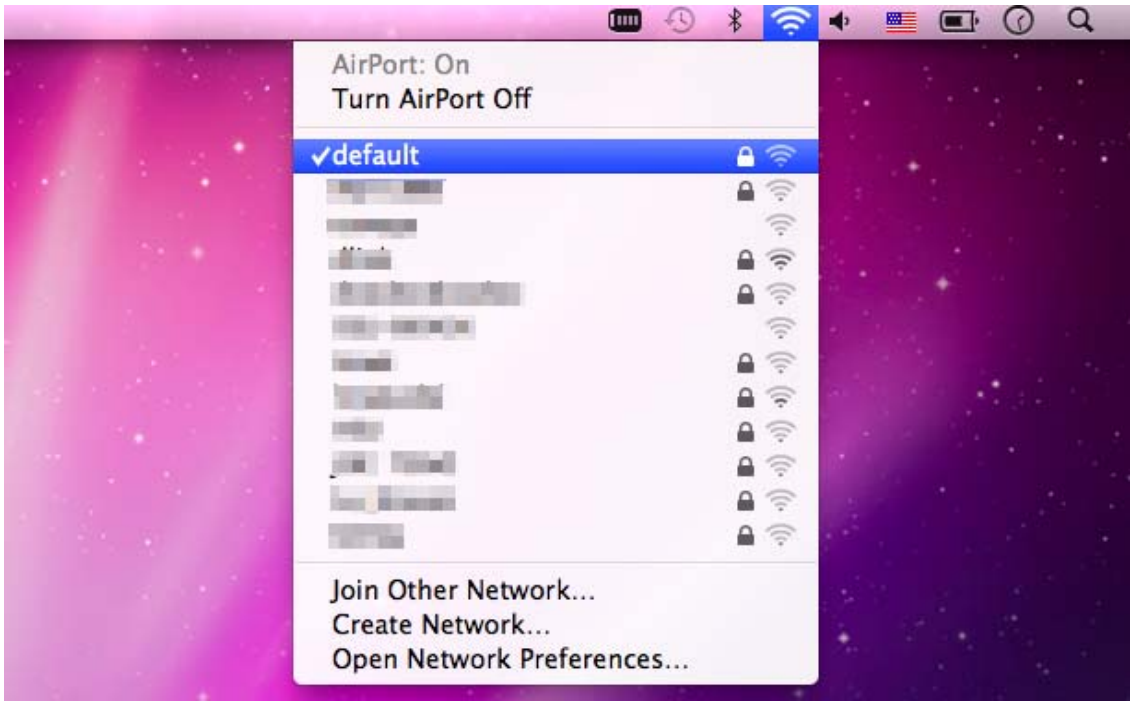


Figure 5-13 Connected to the network

There is another way to configure the MAC OS X Wireless settings:

Step 1: Click and open the [**System Preferences**] by going to **Apple** > **System Preference** or **Applications**

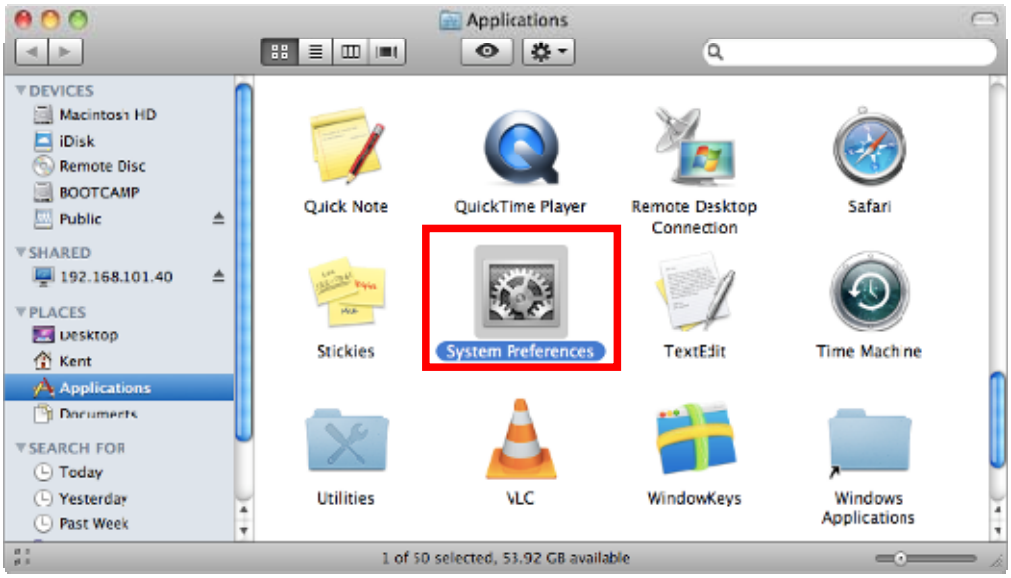


Figure 5-14 System Preferences

Step 2: Open **Network Preference** by clicking on the [**Network**] icon

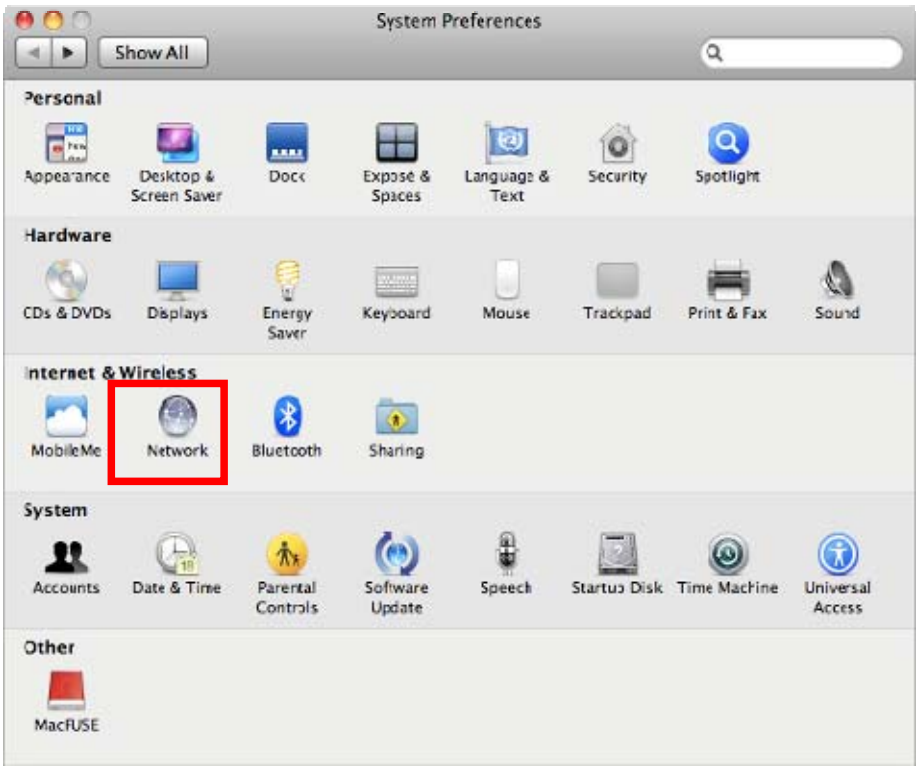


Figure 5-15 System Preferences -- Network

Step 3: Check Wi-Fi setting and select the available wireless network

(1) Choose the **AirPort** on the left-menu (make sure it is ON)

(2) Select Network Name [**default**] here

If this is the first time to connect to the Wireless AP, it should show "Not network selected".

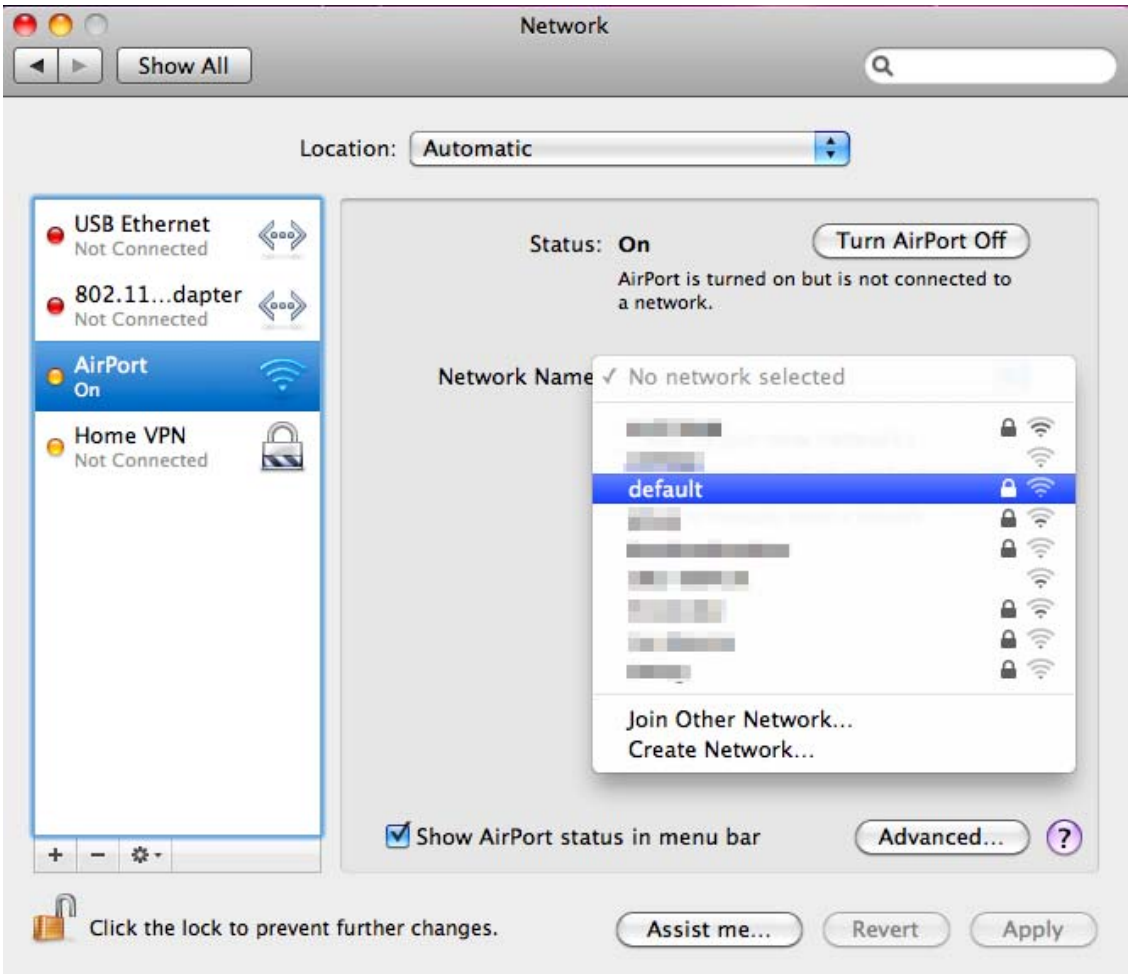


Figure 5-16 Select the Wireless Network

5.4 iPhone / iPod Touch / iPad

In the following sections, the **default SSID** of the DA1104 is configured to "**default**".

Step 1: Tap the [**Settings**] icon displayed in the home screen

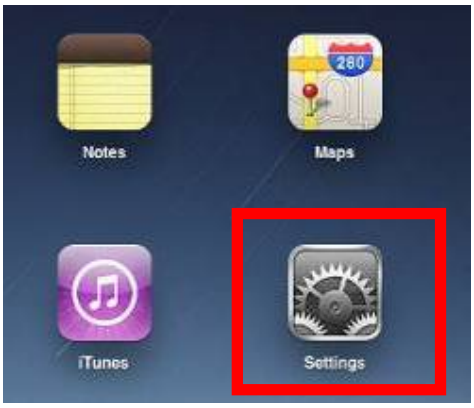


Figure 5-17 iPhone – Settings icon

Step 2: Check Wi-Fi setting and select the available wireless network

(3) Tap [**General**] \ [**Network**]

(4) Tap [**Wi-Fi**]

If this is the first time to connect to the Wireless AP, it should show "Not Connected".

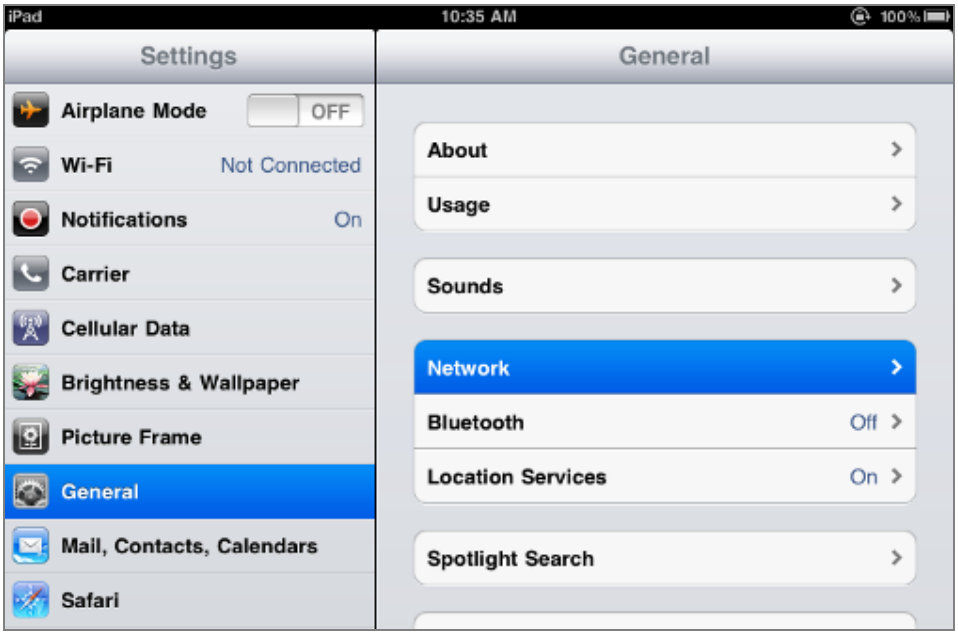


Figure 5-18 Wi-Fi Setting

Figure 5-19 Wi-Fi Setting – Not Connected

Step 3: Tap the target wireless network (SSID) in "**Choose a Network…**"

(1) Turn on Wi-Fi by tapping "**Wi-Fi**"

(2) Select SSID [**default**]

Figure 5-20 Turn on Wi-Fi

Step 4: Enter the **encryption key** of the Wireless AP

(1) The password input screen will be displayed

(2) Enter the encryption key that is configured in section 4.3.4

(3) Tap the [**Join**] button

Figure 5-21 iPhone -- Enter the Password

Step 5: Check if the device is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in the front of the SSID.

Figure 5-22 iPhone -- Connected to the Network

Appendix A: Legrand Smart Discovery Utility

To easily list the DA1104 in your Ethernet environment, the Legrand Smart Discovery Utility is an ideal solution.

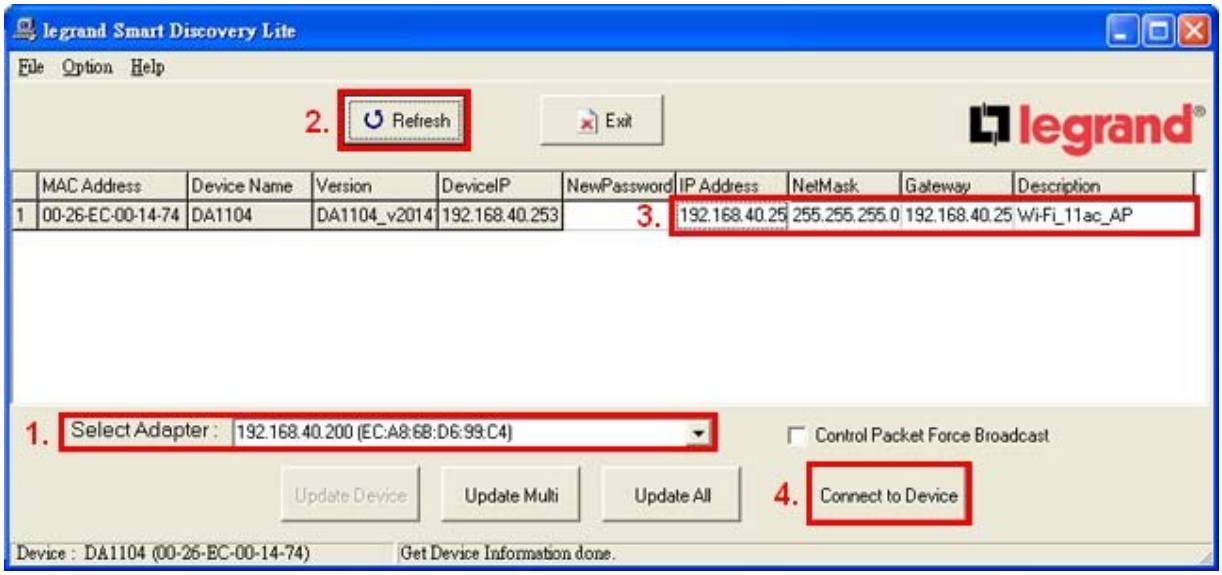
NOTE: To obtain this utility, contact Legrand Technical Support.

The following installation instructions guide you to running the Legrand Smart Discovery Utility.

Step 1: Select your Ethernet Adapter that connected with the DA1104.

Step 2: Click **"Refresh"** button to update the current connected devices list.

Step 3: Click any field in the white area, and then click **"Connect to Device"** button to link to the web configuration page of the DA1104.



Note

The fields in the white area can be modified directly and then you can apply the new setting by clicking the "**Update Device**" button.

Appendix B: Troubleshooting

If you find the AP is working improperly or stops responding to you, please read this section first before contacting your dealer for help. Some problems can be solved by you quickly.

Scenario	Solution
The AP is not responding to me when I want to access it by web browser.	a. Please check the connection of the power source and the Ethernet cable of this AP. All cords and cables should be correctly and firmly inserted to the AP. b. If all LED on this AP is off, please check the status of power source, and make sure it is correctly powered. c. You must use the same IP address section which AP uses. d. Are you using a MAC or IP address filter? Try to connect the AP with another computer and see if it works; if not, reset the AP to the factory default settings (pressing 'reset' button for about 10 seconds). e. Use the Legrand Smart Discovery Utility to see if you can find the AP or not. f. If you did a firmware upgrade and this happens, contact your dealer of purchase for help. g. If all the solutions above don't work, contact the dealer for help.
I can't get connected to the Internet.	a. Go to 'Status' -> 'Internet Connection' menu on the router connected to the AP, and check Internet connection status. b. Check if you can connect to the Internet with your computer directly attached to the device provided by your Internet service provider. c. Check PPPoE / L2TP / PPTP user ID and password entered in the router's settings again. d. If you just can't connect to one or more website, but you can still use other internet services, check the URL/Keyword filter. e. Try to reset the AP and try again later. f. Reset the device provided by your Internet service provider too. g. Try to use IP addresses instead of a host name. If you can use IP address to communicate with a remote server, but can't use host name, please check DNS setting. h. Call your Internet Service Provider and check if there's

	something wrong with their service.
I can't locate my AP from my wireless device.	a. Is 'Broadcast SSID' set to off? b. Both two antennas are properly secured. c. Are you too far from your AP? Try to get closer. d. Please remember that you have to input SSID on your wireless client manually if SSID broadcast is disabled.
File downloading is very slow or breaks frequently.	a. Are you using QoS functionality? Disable it and try again. b. Reset the AP and see if it's better. c. Determine the traffic on your local network. If someone's transferring big files, performance for others may be hindered. d. Call your Internet service provider to see if there is something wrong with their network.
I can't log into the web management interface; the password is wrong.	a. Make sure you're connecting to the correct IP address of the AP. b. Password is case-sensitive. Make sure the 'Caps Lock' light is not illuminated. c. If you really forget the password, do a hard reset.
The AP becomes hot	a. This is not a malfunction if you can keep your hand on the AP's case. b. If you smell something wrong or see the smoke coming out from AP or A/C power source, please disconnect the AP and power source from utility power (make sure it's safe before you're doing this!), and call your dealer of purchase for help.

Appendix C: Glossary

- **802.11ac** - 802.11ac is a wireless networking standard in the 802.11 family (which is marketed under the brand name Wi-Fi), developed in the IEEE Standards Association process, providing high-throughput wireless local area networks (WLANs) on the 5 GHz band.
- **802.11n -** 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) [3] was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **802.11a** - 802.11a was an amendment to the IEEE 802.11 wireless local network specifications that defined requirements for an orthogonal frequency division multiplexing (OFDM) communication system. It was originally designed to support wireless communication in the unlicensed national information infrastructure (U-NII) bands (in the 5–6 GHz frequency range) as regulated in the United States by the Code of Federal Regulations, Title 47, Section 15.407.
- **802.11b -** The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g -** specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **DDNS** (**D**ynamic **D**omain **N**ame **S**ystem) **-** The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- **DHCP** (**D**ynamic **H**ost **C**onfiguration **P**rotocol) **-** A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- **DMZ** (**D**e**m**ilitarized **Z**one) **-** A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- **DNS** (**D**omain **N**ame **S**ystem) **-** An Internet Service that translates the names of websites into IP addresses.
- **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- **DSL** (**D**igital **S**ubscriber **L**ine) **-** A technology that allows data to be sent or received over existing traditional phone lines.
- **ISP** (**I**nternet **S**ervice **P**rovider) **-** A company that provides access to the Internet.

- **MTU** (**Maximum Transmission Unit**) **-** The size in bytes of the largest packet that can be transmitted.
- **NAT** (**N**etwork **A**ddress **T**ranslation) **-** NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- **PPPoE** (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) **-** PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- **SSID -** A **S**ervice **S**et **Id**entification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the SSID in the Wireless Access Point and to the wireless network name.
- **WEP** (**W**ired **E**quivalent **P**rivacy) **-** A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- **Wi-Fi -** A trade name for the 802.11 wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11 devices.
- **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) **-** A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.