



# WL-5460AP

54Mbps Multi-Function  
Wireless AP

## User's Manual



[www.airlive.com](http://www.airlive.com)

# Declaration of Conformity

We, Manufacturer/Importer

**OvisLink Corp.**

**5F., NO.6, Lane 130, Min-Chuan Rd.,  
Hsin-Tien City, Taipei County, Taiwan**

Declare that the product

**Wireless AP**

**AirLive WL-5460AP , WL-5450AP**

**is in conformity with**

In accordance with 89/336 EEC-EMC Directive and 1999/5 EC-R & TTE Directive

## Clause

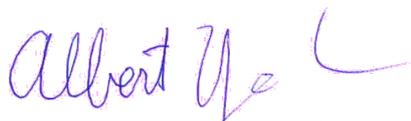
## Description

- **EN 300 328 V1.6.1  
(2004-11)** Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Wideband transmission equipment operating in the 2.4GHz ISM band  
And using spread spectrum modulation techniques; Part 1 : technical  
Characteristics and test conditions Part2 : Harmonized EN covering  
Essential requirements under article 3.2 of the R&TTE Directive
  
- **EN 301 489-1 V1.4.1  
(2002-08)** Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Electromagnetic compatibility(EMC) standard for radio equipment and  
Services; Part 17 : Specific conditions for wideband data and
- **EN 301 489-17 V1.2.1  
(2002-08)** HIPERLAN equipment
  
- **EN 55022: 1998/A1  
:2000/A2:2003** Limits and methods of measurement of radio disturbance  
characteristics of information technology equipment
  
- **EN 55024:1998/A1  
:2001/A2:2003** Information Technology equipment-Immunity characteristics-Limits and  
Methods of measurement
  
- **EN 50385** Product standard to demonstrate the Compliance of radio base  
stations and Fixed terminal stations for wireless Telecommunication  
System with the Basic restrictions or the reference levels related to  
human exposure to radio Frequency electromagnetic fields ( 110 MHz  
- 40 GHz ) - General public
  
- **EN 60950-1:2001/  
A11:2004** Safety for information technology equipment including electrical  
business equipment

■ **CE marking**

**CE 0560** 

Manufacturer/Importer



Signature :

Name :

Position/ Title :

**Albert Yeh**

**Vice President**

Date : **2005/8/17**

(Stamp)

## AirLive WL-5460AP / WL-5450AP CE Declaration Statement

Country	Declaration	Country	Declaration
<b>cs</b> Česky [Czech]	OvisLink Corp. tímto prohlašuje, že tento AirLive WL-5460AP / WL-5450AP je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.	<b>lt</b> Lietuvių [Lithuanian]	Šiuo OvisLink Corp. deklaruoja, kad šis AirLive WL-5460AP / WL-5450AP atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
<b>da</b> Dansk [Danish]	Undertegnede OvisLink Corp. erklærer herved, at følgende udstyr AirLive WL-5460AP / WL-5450AP overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.	<b>nl</b> Nederlands [Dutch]	Hierbij verklaart OvisLink Corp. dat het toestel AirLive WL-5460AP / WL-5450AP in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
<b>de</b> Deutsch [German]	Hiermit erkläre OvisLink Corp., dass sich das Gerät AirLive WL-5460AP / WL-5450AP in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.	<b>mt</b> Malti [Maltese]	Hawnhekk, OvisLink Corp, jiddikjara li dan AirLive WL-5460AP / WL-5450AP jikkonforma mal-ftigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
<b>et</b> Eesti [Estonian]	Käesolevaga kinnitab OvisLink Corp. seadme AirLive WL-5460AP / WL-5450AP vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.	<b>hu</b> Magyar [Hungarian]	Az OvisLink Corporation kijelenti, hogy az AirLive WL-5460AP / WL-5450AP megfelel az 1999/05/CE irányelv alapvető követelményeinek és egyéb vonatkozó rendelkezéseinek.
<b>en</b> English	Hereby, OvisLink Corp., declares that this AirLive WL-5460AP / WL-5450AP is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.	<b>pl</b> Polski [Polish]	Niniejszym OvisLink Corp oświadcza, że AirLive WL-5460AP / WL-5450AP jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
<b>es</b> Español [Spanish]	Por medio de la presente OvisLink Corp. declara que el AirLive WL-5460AP / WL-5450AP cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.	<b>pt</b> Português [Portuguese]	OvisLink Corp declara que este AirLive WL-5460AP / WL-5450AP está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
<b>el</b> Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ OvisLink Corp. ΔΗΛΩΝΕΙ ΟΤΙ AirLive WL-5460AP / WL-5450AP ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.	<b>sl</b> Slovensko [Slovenian]	OvisLink Corp izjavlja, da je ta AirLive WL-5460AP / WL-5450AP v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
<b>fr</b> Français [French]	Par la présente OvisLink Corp. déclare que l'appareil AirLive WL-5460AP / WL-5450AP est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE	<b>sk</b> Slovensky [Slovak]	OvisLink Corp týmto vyhlasuje, že AirLive WL-5460AP / WL-5450AP spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
<b>it</b> Italiano [Italian]	Con la presente OvisLink Corp. dichiara che questo AirLive WL-5460AP / WL-5450AP è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.	<b>fi</b> Suomi [Finnish]	OvisLink Corp vakuuttaa täten että AirLive WL-5460AP / WL-5450AP tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen
<b>lv</b> Latviski [Latvian]	Ar šo OvisLink Corp. deklarē, ka AirLive WL-5460AP / WL-5450AP atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.	<b>is</b> Íslenska [Icelandic]	Hér með lýsir OvisLink Corp yfir því að AirLive WL-5460AP / WL-5450AP er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.
<b>sv</b> Svenska [Swedish]	Härmed intygar OvisLink Corp. att denna AirLive WL-5460AP / WL-5450AP står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.	<b>no</b> Norsk [Norwegian]	OvisLink Corp erklærer herved at utstyret AirLive WL-5460AP / WL-5450AP er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

A copy of the full CE report can be obtained from the following address:

**OvisLink Corp.**  
**5F, No.6 Lane 130,**  
**Min-Chuan Rd, Hsin-Tien City,**  
**Taipei, Taiwan, R.O.C.**

This equipment may be used in AT, BE, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, SK, SI, ES, SE, GB, IS, LI, NO, CH, BG, RO, TR

## **Regulatory Information**

### **Federal Communication Commission Interference Statement**

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

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

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **IMPORTANT NOTE**

#### **FCC Radiation Exposure Statement:**

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

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

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# 1. Introduction

## 1.1 Overview

AirLive WL-5460AP is an IEEE802.11b/g compliant 11 Mbps & 54 Mbps Ethernet Wireless Access Point. The Wireless Access Point is equipped with two 10/100 M Auto-sensing Ethernet ports for connecting to LAN and also for cascading to next Wireless Access Point. AirLive WL-5460AP provides 64/128bit WEP encryption, WPA and IEEE802.1x which ensures a high level of security to protect users' data and privacy. The MAC Address filter prevents the unauthorized MAC Addresses from accessing your Wireless LAN. Your network security is therefore double assured.

The web-based management utility is provided for easy configuration that your wireless network connection is ensured to be always solid and hassle free.

### **Wireless Client Isolation**

The WL-5460APv2 features the new Wireless Client Isolation function previous available only in more expensive APs. When you enable this function, the wireless clients will not be able to see each other. Therefore, it is an important function for office and Hotspot operator to protect the security between different wireless users.

### **ACK Timeout and TX Power Regulation**

The WL-5460APv2 features ACK timeout function to let you adjust the timeout value for long distance operation. In addition, 5-level TX power adjustment let you match different antennas for law compliance. The ability to set lower TX output power is also crucial if you want to match the AP with external power amplifier.

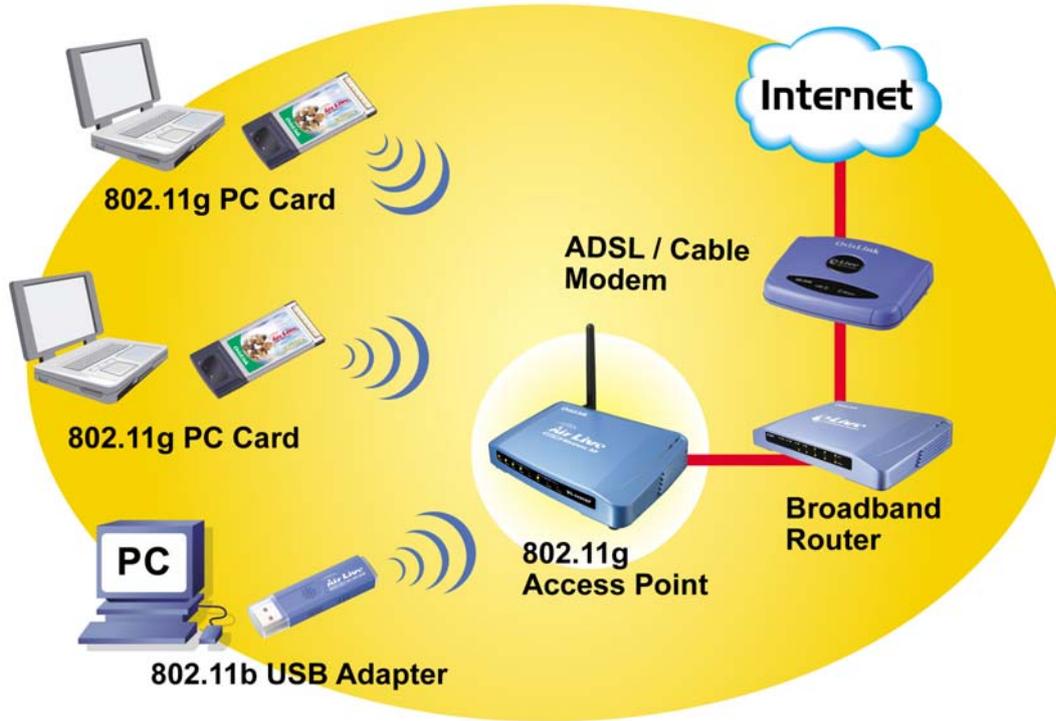
### **Extended Security Features**

The WL-5460APv2 support WEP, WPA and WPA2 security functions. In addition, WPA enterprise for 802.1x authenticator are featured for AP and WDS mode. The combination of Encryption, Hide SSID and Access Control ensures your wireless network is completely secured from intruder.

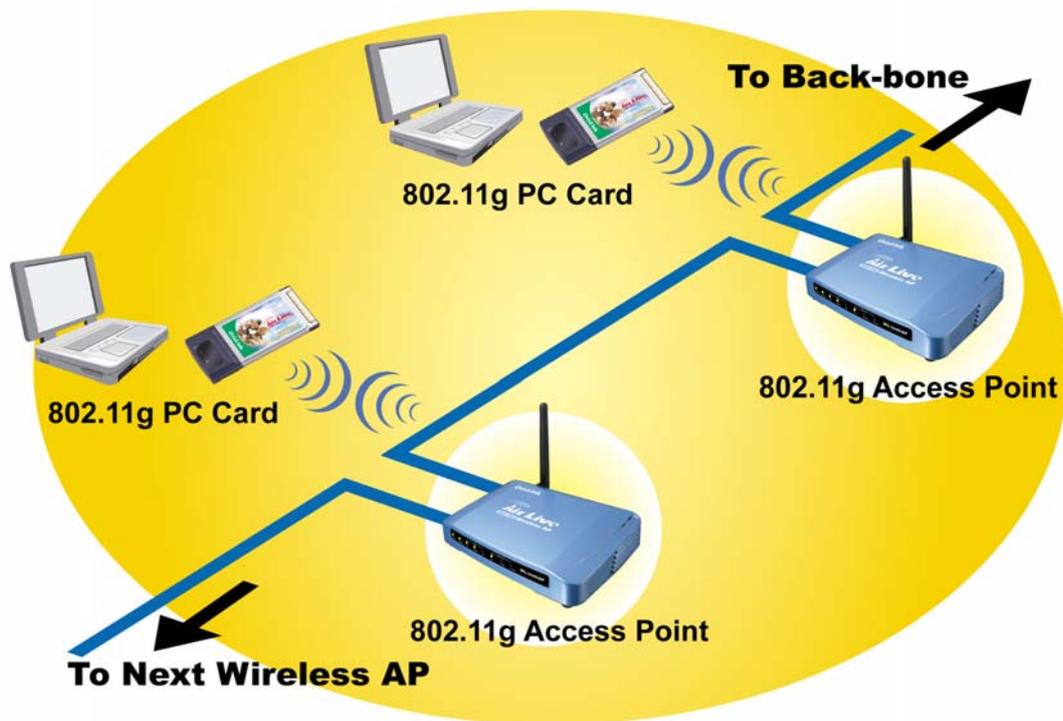
Whether it's for office or home environment, the AirLive 802.11g family bring you the maximum performance and security for today's high speed wireless network.

# Application

## Example 1



## Example 2



# 1.2 Firmware Features

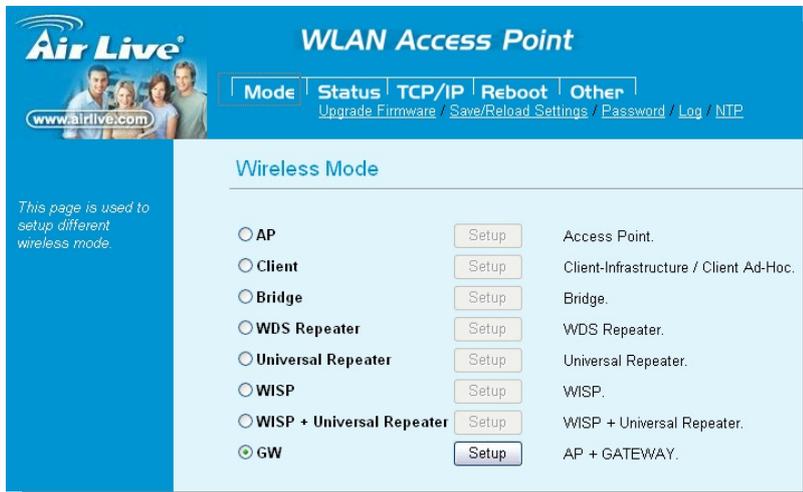
## AirLive Wireless AP Firmware Features

Firmware e11: The Most Powerful AP Firmware Ever!

### WL-5460AP

As the leading global WISP solution provider, AirLive understands the application environments of WISP operators. As a result, we are constantly upgrading our AP's firmware to meet the changing demand of WISP operators. The latest E11 firmware adds high end features not commonly found in the AP of this class. The AirLive multi-function Access Points not only work for long distance application, they work much better than the competitions.

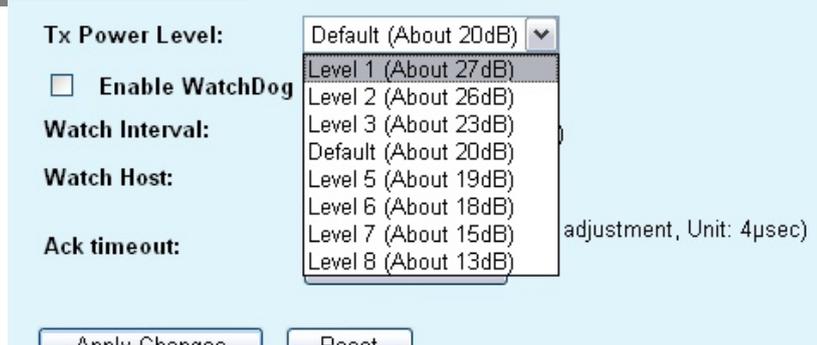
### 8 Wireless Operation Modes



The AirLive WL-5460AP can operate in 8 different wireless modes. It can work as a Wireless Router, AP, Client, Repeater, Bridge, and much more. Whether it is for home, office, or WISP; the AirLive AP has a solution for you.

### Up to 400mW of Output Power\*

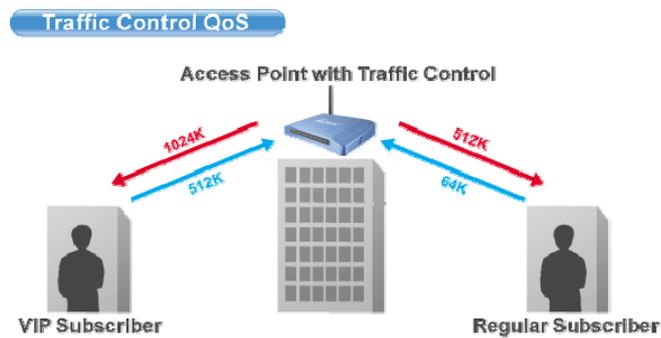
AirLive's high quality hardware let the AP expand its RF output power up to 26dBm using South American firmware. That's 4 times the output power of regular AP! It means much greater distance and coverage.



\* For South America only. Not available for other regions.

### Traffic Control QoS Function

Traffic Control is a great control the bandwidth of the subscribers. Therefore, operators can offer different connection speeds for subscription fees - just like service! The AirLive Traffic Control firmware can bandwidth by Interface or



tool to WISP the WISP class of different the ADSL advance control the IP/MAC.

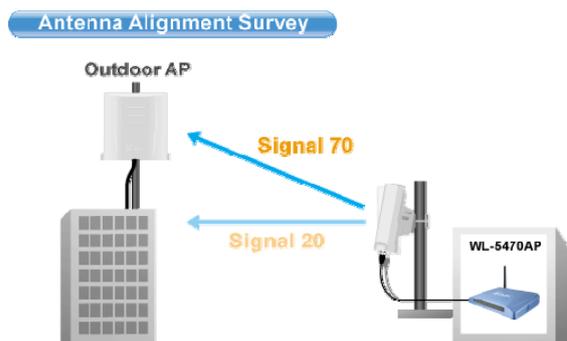
### Dynamic Signal Survey Function for Antenna Alignment

Having trouble align your correctly to the other The AirLive Wireless Signal

Signal Survey

SSID	BSSID	Channel	Type	Encrypt	Signal
airlive	00:50:18:21:d2:27	1 (B+G)	AP	no	83

antenna outdoor AP? Survey function tells you the receiving signal strength



dynamically as your antenna turns. It automatically refreshes itself in the process, therefore, making antenna alignment much simpler than before.

### Wireless Site Survey Connection Wizard

During a new WISP service installation, the installer will to find out which outdoor AP provide the best signal in the for connection. The AirLive wireless site survey function provides one step setup for process. First, the site page shows which AP has strongest the signal. Then installer performs antenna alignment by using the signal survey function. At last, the installer simply clicks on

Wireless Site Survey

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
testd	00:0t	11 (B+G)	AP	WPA-PSK	100	<input type="radio"/>
Gateway	00:4f:	11 (B+G)	AP	no	85	<input type="radio"/>
airlive	00:50	1 (B+G)	AP	no	83	<input checked="" type="radio"/>
AirForce-2	0a:4	2 (B+G)	AP	no	82	<input type="radio"/>
AirLive	00:4	2 (B+G)	AP	no	82	<input type="radio"/>
Air-force-1	06:4f	2 (B+G)	AP	no	82	<input type="radio"/>
Freedom	00:05	6 (B)	AP	WEP	67	<input type="radio"/>
802.11g-SSID	00:e0	11 (B+G)	AP	no	63	<input type="radio"/>
CL-WLAN	00:1E	1 (B+G)	AP	WPA	62	<input type="radio"/>

Refresh Connect Signal Survey

need area this survey the the

“connect” button to establish connection. The site survey is available even in AP mode, so the installer can check the channels used by surrounding APs to avoid interferences.

### Telnet Function

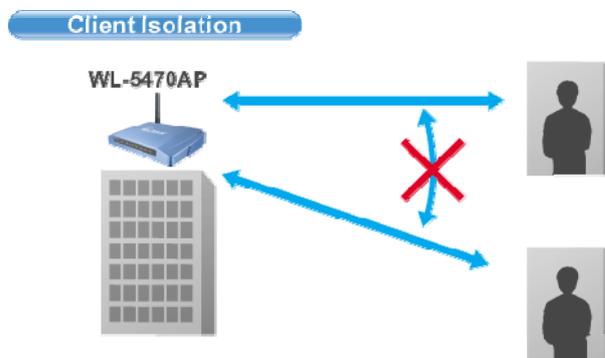
Some WISP operators use CLI command line for configurations. The latest firmware provide full line feature via Telnet.



prefer to  
e11  
command

### Wireless Client Isolation

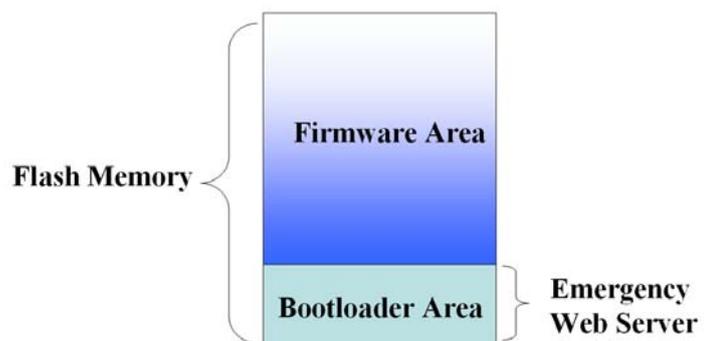
AirLive firmware’s **Client Isolation** function protects the security and privacy of each individual subscriber. Therefore, subscriber does not need to worry about hacker attacks in the same wireless network.



### Emergency Recovery

How many times your machine crashed and lost access completely?

The AirLive’s Emergency web server function means you can recover your AP even during if the machine failed during a firmware upgrade. This greatly reduces the service loading for WISP operators.



## 1.3 Installing WL-5460AP

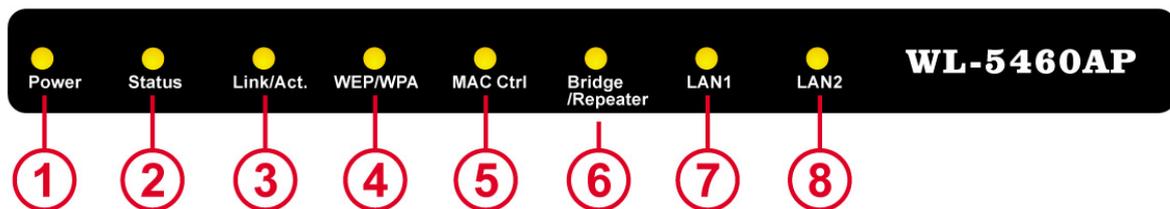
This section describes the installation procedure for the WL-5460AP. It starts with a summary of the content of the package you have purchased, followed by steps of how to power up and connect the WL-5460AP. Finally, this section explains how to configure a Windows PC to communicate with the WL-5460AP.

### 1.3.1 Package Content

The WL-5460AP package contains the following items:

- ✓ One WL-5460AP main unit
- ✓ One 12V DC power adapter
- ✓ Indoor detachable Omni Antenna x 1
- ✓ One CD of the WL-5460AP
- ✓ Quick Start Guide

## 1.3.2 Hardware Presentation



LED #	Display	Color	Indication
1	Power	Green	Lights on when the device is powered.
2	Status	Red	Lights on when the device is booting, lights off after boot successfully.
3	Link/Act	Green	Lights on when any one client connected. Blinking when sending or receiving data.
4	WEP/WPA	Green	Lights on when wireless security is enabled
5	MAC Ctrl	Green	Lights on when MAC control is enabled.
6	Bridge / Repeater	Green	Lights on when Bridge or Repeater is enabled
7	LAN1	Green	Lights on when the port is actively connected, blinking when transmitting or receiving data.
8	LAN2	Green	



Item #	Function	Description
A	Power Adaptor	12V 1A power supply adaptor delivered with product.
B	LAN1	LAN port
C	LAN2	LAN port 2 or WAN port(Gateway Mode only)
D	(Factory) Reset	Press over 3 seconds to reboot this device. Press for over 10 seconds to restore factory settings. Performing the Factory Reset will erase all previously entered device settings.

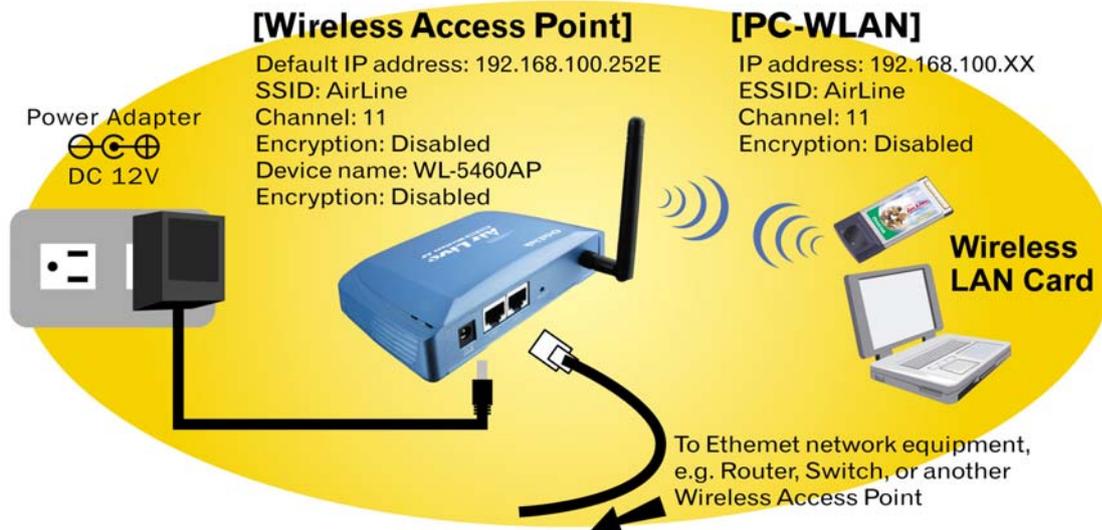
### 1.3.3 Configuration Setups

The factory default settings of WL-5460AP are as following:

<b>Settings</b>	<b>Default Value</b>
<b>Device Name</b>	WL-5460AP
<b>Radio</b>	802.11b/g
<b>SSID</b>	airlive
<b>Channel</b>	11
<b>WEP</b>	Disabled
<b>IP Address</b>	192.168.100.252
<b>DHCP Server</b>	Disabled. Available and default enabled when each of the wireless is configured as a gateway.
<b>DHCP IP Range</b>	192.168.100.100 ~ 192.168.100.200

## 1.3.4 Hardware Connection

**Note:** Before you starting hardware connection, you are advised to find an appropriate location to place the Access Point. Usually, the best place for the Access Point is at the center of your wireless network, with line of straight to all your wireless stations. Also, remember to adjust the antenna; usually the higher the antenna is placed; the better will be the performance.



1. **Connect to your local area network:** connect an Ethernet cable to one of the Ethernet port (LAN1 or LAN2) of this Wireless Access Point, and the other end to a hub, switch, router, or another wireless access point.
2. **Power on the device:** connect the included AC power adapter to the Wireless Access Point's power port and the other end to a wall outlet.

• **Check the LED:**

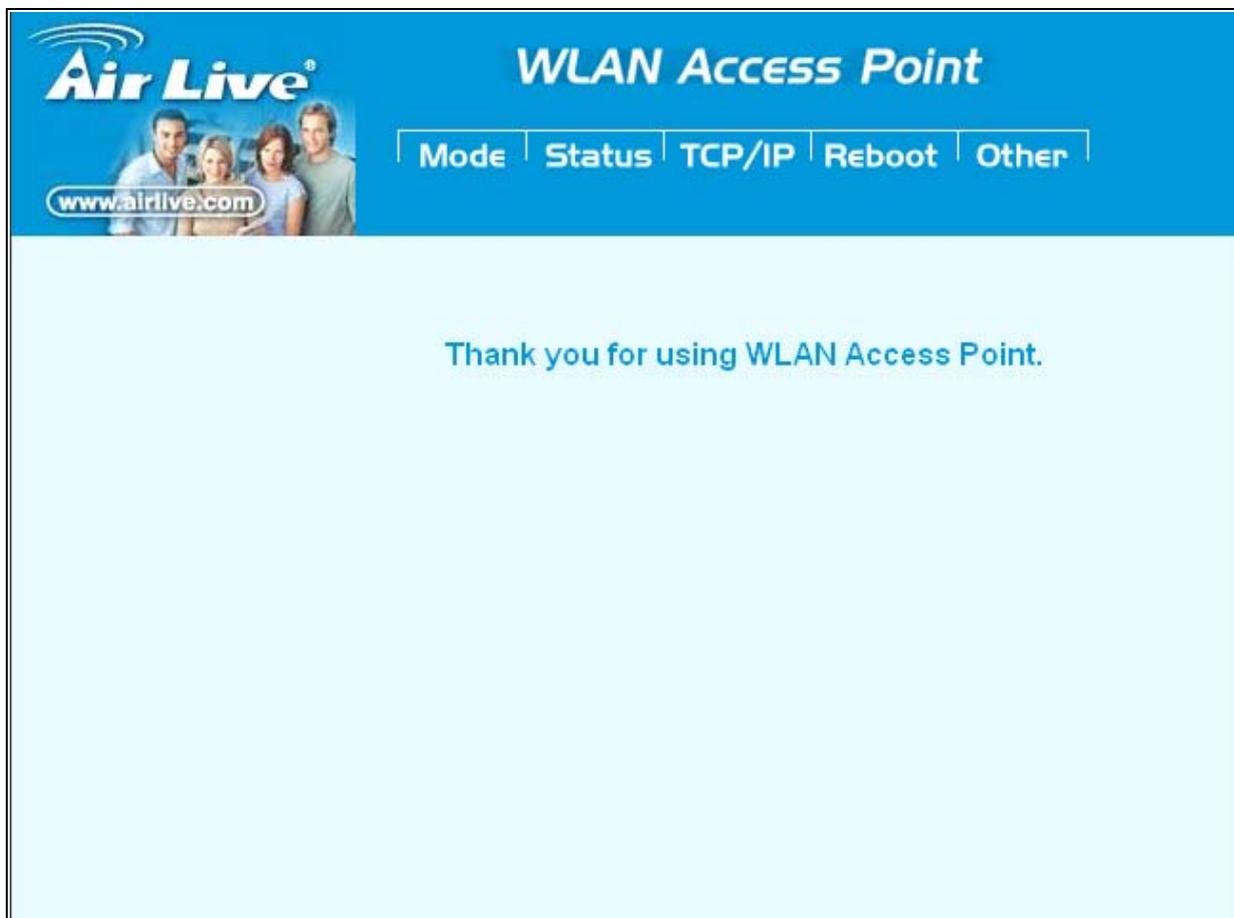
The Power and LAN # LED should be ON. LAN# LED will even blink if there is traffic.

The Link/Act LED will be on in static when associated with a station and blink whenever this AP receives data packets in the air.

If the Status LED glows after self-test, it means the Wireless Access Point fails on self test.

Please ask your dealer for technical support.

- 1 Please make sure your computer IP is in the same subnet as the AP (i.e. 192.168.100.x).
- 2 Please make sure your computer has wireless network adapter installed.
- 3 Open the web browser and enter <http://192.168.100.252/>.



## 2. Operation Mode

The WL-5460AP device provides all 8 modes of wireless operational applications with:

Mode	Radio	LAN 1	LAN 2
AP	AP	LAN	LAN
Client	Client	LAN	LAN
Bridge	WDS	LAN	LAN
WDS Repeater	WDS + AP	LAN	LAN
Universal Repeater	AP + Client	LAN	LAN
WISP	Client Router	LAN	LAN
WISP + Universal Repeater	Client Router + AP	LAN	LAN
Gateway	AP+ Router	WAN	LAN


WLAN Access Point

Mode
Status
TCP/IP
Reboot
Other

*This page is used to setup different wireless mode.*

### Wireless Mode

<input checked="" type="radio"/> <b>AP</b>	<input type="button" value="Setup"/>	Access Point.
<input type="radio"/> <b>Client</b>	<input type="button" value="Setup"/>	Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> <b>Bridge</b>	<input type="button" value="Setup"/>	Bridge.
<input type="radio"/> <b>WDS Repeater</b>	<input type="button" value="Setup"/>	WDS Repeater.
<input type="radio"/> <b>Universal Repeater</b>	<input type="button" value="Setup"/>	Universal Repeater.
<input type="radio"/> <b>WISP</b>	<input type="button" value="Setup"/>	WISP.
<input type="radio"/> <b>WISP + Universal Repeater</b>	<input type="button" value="Setup"/>	WISP + Universal Repeater.
<input type="radio"/> <b>Gateway</b>	<input type="button" value="Setup"/>	AP + Router.

## 2.0 Change Operation Mode

WL-5460AP is default in AP mode. If the mode had been changed, click the “**Mode**” button to change back.

To change operation Mode:

1. Click on “**Mode**”
2. Select Operation Mode in the main page
3. Reboot device
4. Click Setup for detail configuration

The screenshot shows the 'WLAN Access Point' configuration page for 'Air Live'. The 'Mode' button is highlighted with a red box. Below it, the 'Wireless Mode' section is visible, containing a list of modes with radio buttons and corresponding 'Setup' buttons. The 'AP' mode is selected. A red box highlights the 'Setup' button for the 'AP' mode. A red arrow points from a text box to this 'Setup' button. The text box contains the instruction: 'After reboot, click "Setup" for detail configuration'. Another red box at the bottom of the page contains the instruction: 'Select Operation Mode and reboot the system', with an arrow pointing up towards the mode selection area.

**Mode** | Status | TCP/IP | Reboot | Other

**Wireless Mode**

*This page is used to setup different wireless mode.*

- AP**  Access Point.
- Client**  Client-Infrastructure / Client Ad-Hoc.
- Bridge**  Bridge.
- WDS Repeater**  WDS Repeater.
- Universal Repeater**  Universal Repeater.
- WISP**  WISP.
- WISP + Universal Repeater**  WISP + Universal Repeater.
- Gateway**  Gateway.
- AP + Router**  AP + Router.

**After reboot, click "Setup" for detail configuration**

**Select Operation Mode and reboot the system**

## 2.1 About the Operation Modes

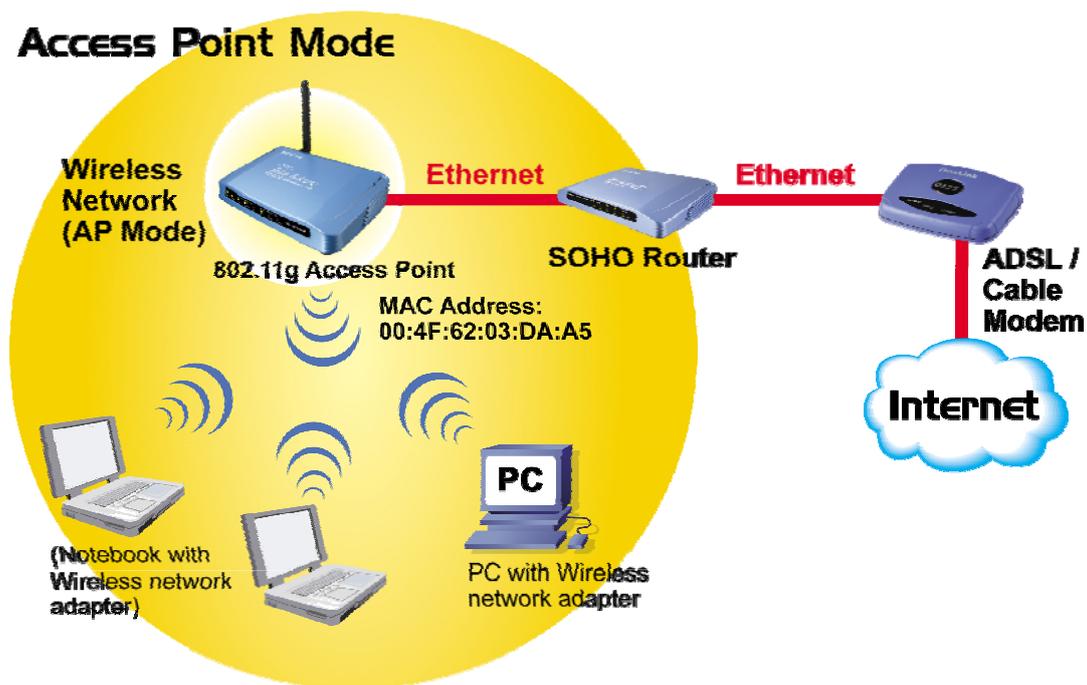
This device provides four operational applications with **Access Point**, **Bridge**, **Client (Ad-hoc)** and **Client (Infrastructure)** modes, which are mutually exclusive.

This device is shipped with configuration that is functional right out of the box. If you want to change the settings in order to perform more advanced configuration or even change the mode of operation, you can use the web-based utility provided by the manufacturer as described in the following sections.

### 2.1.1 Access Point Mode

When acting as an access point, this device connects all the stations (PC/notebook with wireless network adapter) to a wired network. All stations can have the Internet access if only the Access Point has the Internet connection.

See the sample application below.



To set the operation mode to Access Point, please go to **“Mode”** field and select the **“AP”** mode.

*This page is used to  
setup different  
wireless mode.*

## Wireless Mode

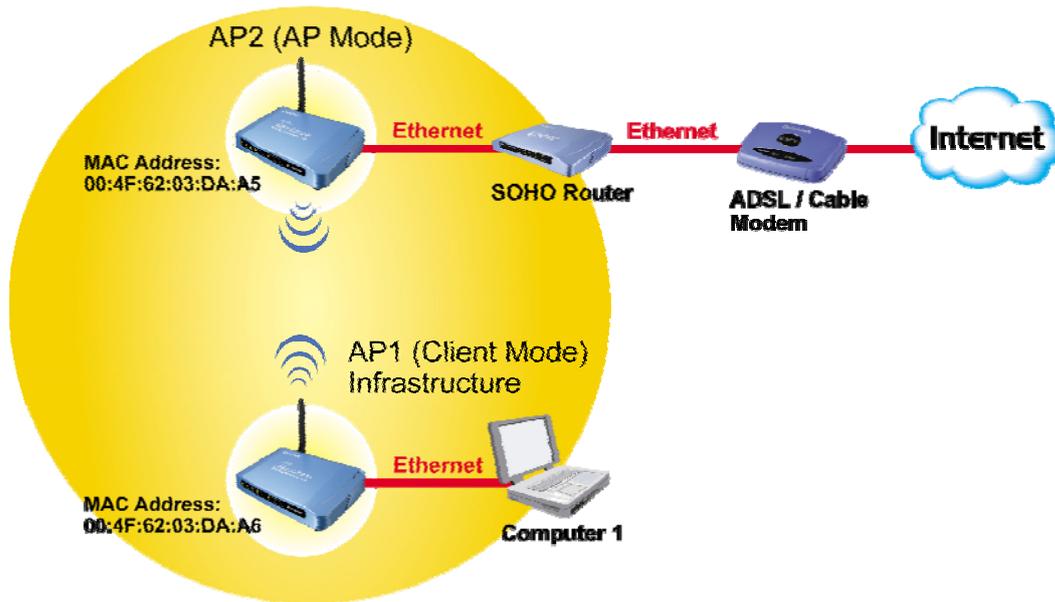
- |  |                                      |  |
|--|--------------------------------------|--|
| <input checked="" type="radio"/> <b>AP</b>             | <input type="button" value="Setup"/> | Access Point.                          |
| <input type="radio"/> <b>Client</b>                    | <input type="button" value="Setup"/> | Client-Infrastructure / Client Ad-Hoc. |
| <input type="radio"/> <b>Bridge</b>                    | <input type="button" value="Setup"/> | Bridge.                                |
| <input type="radio"/> <b>WDS Repeater</b>              | <input type="button" value="Setup"/> | WDS Repeater.                          |
| <input type="radio"/> <b>Universal Repeater</b>        | <input type="button" value="Setup"/> | Universal Repeater.                    |
| <input type="radio"/> <b>WISP</b>                      | <input type="button" value="Setup"/> | WISP.                                  |
| <input type="radio"/> <b>WISP + Universal Repeater</b> | <input type="button" value="Setup"/> | WISP + Universal Repeater.             |
| <input type="radio"/> <b>GW</b>                        | <input type="button" value="Setup"/> | AP + GATEWAY.                          |

## 2.1.2 Client Mode

If set to Client (Infrastructure) mode, this device can work like a wireless station when it's connected to a computer so that the computer can send packets from wired end to wireless interface.

Refer to the illustration below. This station (AP1 plus the connected computer 1) can associate to another Access Point (AP2), and then can have the Internet access if the other Access Point (AP2) has the Internet connection.

### Client Mode (Infrastructure)



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**Client**” mode.



OvisLink Corp.  
www.ovislink.com.tw

## WLAN Access Point

Mode | Status | TCP/IP | Reboot | Other

### Wireless Mode

<input type="radio"/> AP	Setup	Access Point.
<input checked="" type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> Bridge	Setup	Bridge.
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.
<input type="radio"/> Universal Repeater	Setup	Universal Repeater.
<input type="radio"/> WISP	Setup	WISP.
<input type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.
<input type="radio"/> GW	Setup	AP + GATEWAY.

*This page is used to setup different wireless mode.*

## 2.1.3 Bridge Mode

The WDS (Wireless Distributed System) function let this access point acts as a wireless LAN access point and repeater at the same time. Users can use this feature to build up a large wireless network in a large space like airports, hotels and schools ...etc. This feature is also useful when users want to bridge networks between buildings where it is impossible to deploy network cable connections between these buildings.



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**Bridge**” mode.

**Air Live**  
OvisLink Corp.  
www.ovislink.com.tw

### WLAN Access Point

Mode | Status | TCP/IP | Reboot | Other

#### Wireless Mode

*This page is used to setup different wireless mode.*

<input type="radio"/> AP	Setup	Access Point.
<input type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.
<input checked="" type="radio"/> Bridge	Setup	Bridge.
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.
<input type="radio"/> Universal Repeater	Setup	Universal Repeater.
<input type="radio"/> WISP	Setup	WISP.
<input type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.
<input type="radio"/> GW	Setup	AP + GATEWAY.

## 2.1.4 WDS Repeater

Refer to the illustration below. While acting as Bridges, AP1 (with Station 1 being associated to) and AP2 (with Station 2 being associated) can communicate with each other through wireless interface (with WDS). Thus Station 1 can communicate with Station 2 and both Station 1 and Station 2 are able to access the Internet if only AP1 or AP2 has the Internet connection.



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**WDS Repeater**” mode.

The screenshot shows the 'WLAN Access Point' configuration page for 'Air Live' by OvisLink Corp. The 'Mode' tab is selected, showing a list of wireless modes. The 'WDS Repeater' mode is selected with a radio button.

Mode	Status	TCP/IP	Reboot	Other
<b>Wireless Mode</b>				
<input type="radio"/> AP	Setup			Access Point.
<input type="radio"/> Client	Setup			Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> Bridge	Setup			Bridge.
<input checked="" type="radio"/> WDS Repeater	Setup			WDS Repeater.
<input type="radio"/> Universal Repeater	Setup			Universal Repeater.
<input type="radio"/> WISP	Setup			WISP.
<input type="radio"/> WISP + Universal Repeater	Setup			WISP + Universal Repeater.
<input type="radio"/> GW	Setup			AP + GATEWAY.

## 2.1.5 Universal Repeater

An universal repeater can also extend the wireless coverage of another wireless AP or router. But the universal repeater does not require the remote device to have WDS function. Therefore, it can work with almost any wireless device.



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**Universal Repeater**” mode.

The screenshot shows the 'WLAN Access Point' configuration page for Air Live. The 'Mode' tab is selected. Under 'Wireless Mode', the 'Universal Repeater' option is selected with a radio button. Other options include AP, Client, Bridge, WDS Repeater, WISP, WISP + Universal Repeater, and GW. Each option has a 'Setup' button and a brief description.

Mode	Status	TCP/IP	Reboot	Other
<b>Wireless Mode</b>				
<input type="radio"/> AP	Setup	Access Point.		
<input type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.		
<input type="radio"/> Bridge	Setup	Bridge.		
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.		
<input checked="" type="radio"/> Universal Repeater	Setup	Universal Repeater.		
<input type="radio"/> WISP	Setup	WISP.		
<input type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.		
<input type="radio"/> GW	Setup	AP + GATEWAY.		

## 2.1.6 WISP (Client Router) mode

In WISP mode, the AP will behave just the same as the Client mode for wireless function. However, router functions are added between the wireless WAN side and the Ethernet LAN side. Therefore, the WISP subscriber can share the WISP connection without the need for extra router.



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**WISP**” mode.

The screenshot shows the configuration interface for an Air Live WLAN Access Point. The 'Mode' tab is selected, and the 'WISP' mode is chosen. The interface includes a navigation menu with 'Mode', 'Status', 'TCP/IP', 'Reboot', and 'Other'. A list of wireless modes is displayed, each with a radio button and a 'Setup' button.

Mode	Setup	Description
<input type="radio"/> AP	Setup	Access Point.
<input type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> Bridge	Setup	Bridge.
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.
<input type="radio"/> Universal Repeater	Setup	Universal Repeater.
<input checked="" type="radio"/> WISP	Setup	WISP.
<input type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.
<input type="radio"/> GW	Setup	AP + GATEWAY.

## 2.1.7 WISP + Universal Repeater mode

In this mode, the AP behaves virtually the same as the WISP mode, except one thing: the AP can also send wireless signal to the LAN side. That means the AP can connect with the remote WISP AP and the indoor wireless card, and then provide IP sharing capability all at the same time!



To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**WISP + Universal Repeater**” mode.

**Air Live**  
OvisLink Corp.  
www.ovislink.com.tw

### WLAN Access Point

Mode | Status | TCP/IP | Reboot | Other

#### Wireless Mode

*This page is used to setup different wireless mode.*

<input type="radio"/> AP	Setup	Access Point.
<input type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> Bridge	Setup	Bridge.
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.
<input type="radio"/> Universal Repeater	Setup	Universal Repeater.
<input type="radio"/> WISP	Setup	WISP.
<input checked="" type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.
<input type="radio"/> GW	Setup	AP + GATEWAY.

## 2.1.8 Gateway (AP + Router)

In this mode, router functions are added between one Ethernet port and the other network interface. The radio is an AP mode which allow wireless client to share the internet connection.

To set the operation mode to Client (Infrastructure), please go to “**Mode**” field and select the “**Gateway**” mode.



To set the operation mode to “GW Mode”, Please go to “Mode → GW” and click the Setup button for configuration.



**WLAN Access Point**

Mode | Status | TCP/IP | Reboot | Other

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*This page is used to setup different wireless mode.*

### Wireless Mode

<input type="radio"/> AP	Setup	Access Point.
<input type="radio"/> Client	Setup	Client-Infrastructure / Client Ad-Hoc.
<input type="radio"/> Bridge	Setup	Bridge.
<input type="radio"/> WDS Repeater	Setup	WDS Repeater.
<input type="radio"/> Universal Repeater	Setup	Universal Repeater.
<input type="radio"/> WISP	Setup	WISP.
<input type="radio"/> WISP + Universal Repeater	Setup	WISP + Universal Repeater.
<input checked="" type="radio"/> GW	Setup	AP + GATEWAY..

# 3. Wireless Settings

This section guides you to configure the mode of the Radio interface.

## 3.1 Access Point Mode Settings

**AP Mode Settings**

Alias Name:

**Disable Wireless LAN Interface**

Band:

SSID:

Channel Number:

Wireless Client Isolation:

Security:

Advanced Settings:

Access Control:

Traffic Control (QoS):

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⦿ 2.4GHz (B): 802.11b supported rate only.
  - ⦿ 2.4GHz (G): 802.11g supported rate only.
  - ⦿ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

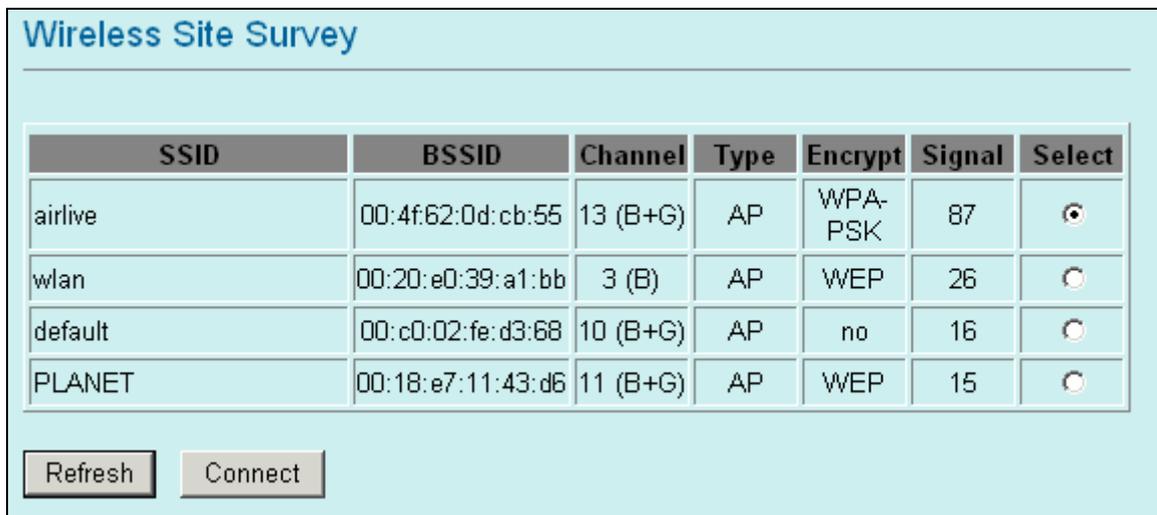
The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also

referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is provided for client connection.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “**Auto**” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **Wireless Client Isolation:** This is to separate wireless client if needed. Wireless clients can not communicate to each other if the field is enabled.
- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.



**Wireless Site Survey**

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

Refresh    Connect

To configure the security connection, please refer to **Section 3.9 Wireless Security Settings .....**

To configure the Advanced Settings, please refer to **Section 3.10 Advanced Wireless Settings .....**

To configure the access control, please refer to **Section 3.11 Access Control Settings .....**

To configure the Traffic Control, please refer to **Section 3.12 Access Control Settings .....**

## 3.2 Client Mode Settings

**Client Mode Settings**

Alias Name:

Disable Wireless LAN Interface

Band:

Network Type:

SSID:

Channel Number:

Auto Mac Clone (Single Ethernet Client)

Manual MAC Clone Address:

Security:

Advanced Settings:

Traffic Control(QoS):

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is the available remote Access Point to connect to.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “Auto” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **Auto Mac Clone (Single Ethernet Client):** If your ISP restricts service to PCs only, use the MAC Clone feature to copy a PC Media Access Control (MAC) address to your router. This procedure will cause the router to appear as a single PC, while allowing online access to multiple computers on your network.
- **Manual MAC Clone Address:** You can also manually provide MAC address to the router. This solves the problem if you have more than one PC which need to access the internet..
- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.

**Wireless Site Survey**

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

Refresh    Connect

To configure the security connection, please refer to **Section 3.9 Wireless Security Settings .....**

To configure the Advanced Settings, please refer to **Section 3.10 Advanced Wireless Settings .....**

To configure the access control, please refer to **Section 3.11 Access Control Settings .....**

To configure the Traffic Control, please refer to **Section 3.12 Access Control Settings .....**

## 3.3 Bridge Mode Settings

### Bridge Mode Settings

**Alias Name:**

**Disable Wireless LAN Interface**

**Band:**

**Channel Number:**

**802.1d Spanning Tree:**

**WDS Security:**

**Advanced Settings:**

**AP MAC Address:**

**Comment:**

**AP MAC List:**

MAC Address	Comment	Select
00:4f:62:03:da:a1	Node 1	<input type="checkbox"/>
00:4f:62:03:da:ce	Node 2	<input type="checkbox"/>

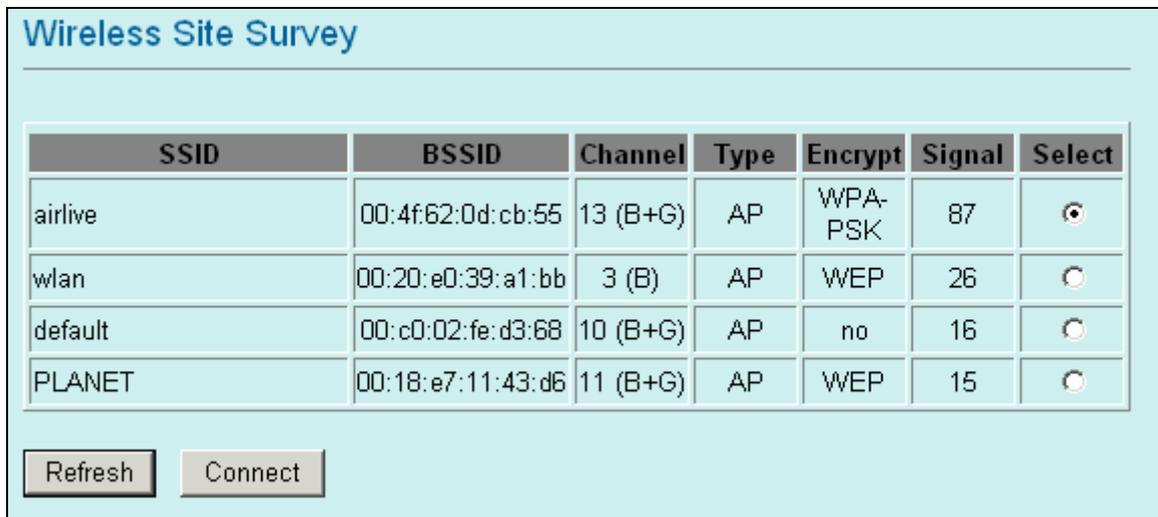
- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - Ⓐ 2.4GHz (B): 802.11b supported rate only.
  - Ⓑ 2.4GHz (G): 802.11g supported rate only.
  - Ⓒ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If "Auto" is selected, user can set the channel range to have Wireless Access Point automatically survey

and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.

- **802.1d Spanning Tree:** Spanning tree is to prevent bridge loop when there are multiple active paths between network nodes. Bridge loop could cause connection fail or broadcast storm. Spanning tree allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links.
- **AP MAC Address:** Fill the MAC address of the remote WDS node which you want to connect to.
- **Site Survey:** Use this button to find out the remote WDS node and check the signal strength. It helps to build up you WDS network correctly.



The image shows a screenshot of a 'Wireless Site Survey' interface. It features a table with the following columns: SSID, BSSID, Channel, Type, Encrypt, Signal, and Select. Below the table are two buttons: 'Refresh' and 'Connect'.

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

To configure the security connection, please refer to **Section 3.9 Wireless Security Settings .....**

To configure the Advanced Settings, please refer to **Section 3.10 Advanced Wireless Settings .....**

To configure the access control, please refer to **Section 3.11 Access Control Settings .....**

To configure the Traffic Control, please refer to **Section 3.12 Access Control Settings .....**

## 3.4 WDS Repeater Mode Settings

### WDS Repeater Mode Settings

**Alias Name:**

**Disable Wireless LAN Interface**

**Band:**

**SSID:**

**Channel Number:**

**Wireless Client Isolation:**

**802.1d Spanning Tree:**

**Security:**

**WDS Security:**

**Advanced Settings:**

**Access Control:**

**AP MAC Address:**

**Comment:**

**AP MAC List:**

MAC Address	Comment	Select
00:4f:62:03:da:a1	Node 1	<input type="checkbox"/>
00:4f:62:03:da:ce	Node 2	<input type="checkbox"/>

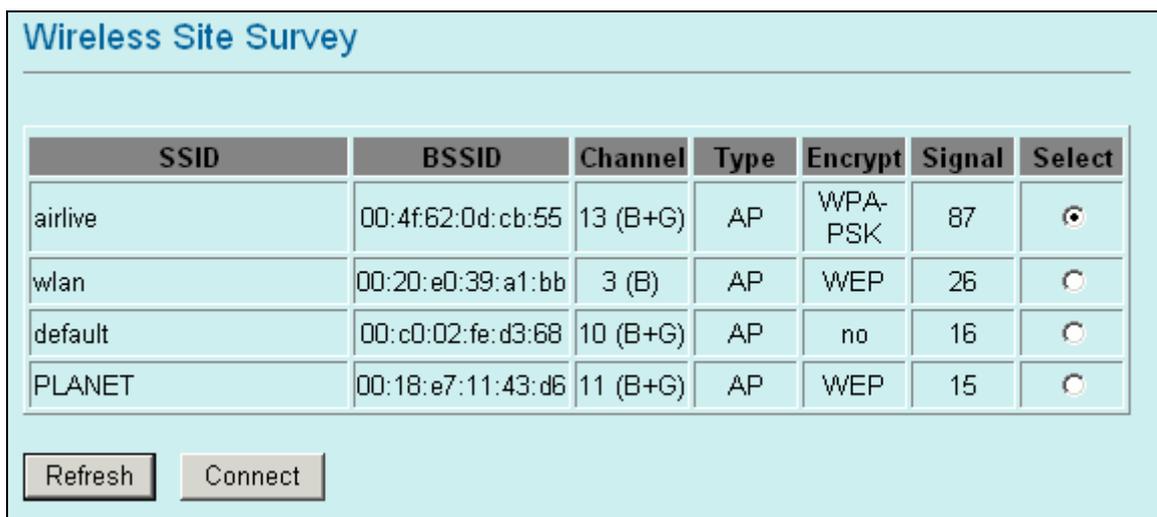
- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** Provide SSID for wireless client survey and connection. The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is provided for wireless client connection.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “Auto” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **802.1d Spanning Tree:** Spanning tree is to prevent bridge loop when there are multiple active paths between network nodes. Bridge loop could cause connection fail or broadcast storm. Spanning tree allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links.
- **AP MAC Address:** Fill the MAC address of the remote WDS node which you want to connect to.
- **Site Survey:** Use this button to find out the remote WDS node and check the signal strength. It helps to build up you WDS network correctly.



Wireless Site Survey

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

Refresh Connect

**To configure the security connection, please refer to Section 3.9 Wireless Security Settings .....**

**To configure the Advanced Settings, please refer to Section 3.10 Advanced Wireless Settings .....**

**To configure the access control, please refer to Section 3.11 Access Control Settings .....**

**To configure the Traffic Control, please refer to Section 3.12 Access Control Settings .....**

## 3.5 Universal Repeater Mode Settings

### Universal Repeater Mode Settings

**Alias Name:**

**Disable Wireless LAN Interface**

**Band:**

**SSID:**

**Channel Number:**

**Wireless Client Isolation:**

**SSID of Extended Interface:**

**802.1d Spanning Tree:**

**Security:**

**Advanced Settings:**

**Access Control:**

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** Provide SSID for wireless client survey and connection. The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because essentially it is a name that identifies a wireless network.

This field is to provide for wireless client connection.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “Auto” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **SSID of Extended Interface:** This field is the SSID of remote Access Point to connect to.
- **802.1d Spanning Tree:** Spanning tree is to prevent bridge loop when there are multiple active paths between network nodes. Bridge loop could cause connection fail or broadcast storm. Spanning tree allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links.
- **Site Survey:** Use this button to find out the remote Access Point and check the signal strength.

**Wireless Site Survey**

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

Refresh    Connect

**To configure the security connection, please refer to Section 3.9 Wireless Security Settings .....**

**To configure the Advanced Settings, please refer to Section 3.10 Advanced Wireless Settings .....**

**To configure the access control, please refer to Section 3.11 Access Control Settings .....**

**To configure the Traffic Control, please refer to Section 3.12 Access Control Settings .....**

## 3.6 WISP Mode Settings

### WISP Mode Settings

---

**Alias Name:**

**Disable Wireless LAN Interface**

**Band:**

**SSID:**

**Security:**

**Advanced Settings:**  **Client Mode Settings**

---

**Wan Port:**  **Router Settings**

**Virtual Server:**

**Special Application:**

**DMZ:**

**Remote Management:**

**Traffic Control(QoS):**

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is the remote WISP CPE to connect to.

- **WAN Port:** WL-5460AP provides 4 methods for client to access the internet. This depends on the location and the service which the ISP provides. You need to contact the ISP for detail information.

### WAN Port Configuration

**WAN Access Type:** DHCP Client  

 Static IP  
 DHCP Client  
 PPPoE  
 PPTP  
 L2TP
  automatically  
 usually

**DNS 1:**

**DNS 2:**

**DNS 3:**

**Clone MAC Address:**

Respond to WAN Ping  
 Enable UPnP  
 Enable IPsec pass through on VPN connection  
 Enable PPTP pass through on VPN connection  
 Enable L2TP pass through on VPN connection

- **Virtual Server:** You can use Virtual Server Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.

### Virtual Servers

Enable Virtual Servers

**Servers:** New

**Local IP Address:**

**Protocol:** 
 New  
 Web  
 FTP  
 E-Mail(POP3)  
 E-Mail(SMTP)  
 DNS  
 Telnet

**Port Range:**

**Description:**

**Current Virtual Servers Table:**

Local IP Address	Protocol	Port Range	Description	Select
<input type="button" value="Delete Selected"/> <input type="button" value="Delete All"/> <input type="button" value="Reset"/>				

- **Special Application:** This is to enable internet service such as sound, video and so on. The routing firewall often stops these services for security reason.
- **DMZ:** You can use DMZ Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.
- **Remote Management:** This is to configure WL-5460AP be managed from internet. Note that port 80 is always used by web service. You can change the port to prevent conflict.

### Remote Management

---

Enable Web Server Access via WAN

**Port Number:**

- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.

### Wireless Site Survey

---

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

To configure the security connection, please refer to **Section 3.9 Wireless Security Settings .....**

To configure the Advanced Settings, please refer to **Section 3.10 Advanced Wireless Settings .....**

To configure the access control, please refer to **Section 3.11 Access Control Settings .....**

To configure the Traffic Control, please refer to **Section 3.12 Access Control Settings .....**

## 3.7 WISP + Universal Mode Settings

### WISP + Universal Repeater Mode Settings

Alias Name:	<input type="text" value="Wireless_AP"/>
<input type="checkbox"/> Disable Wireless LAN Interface	
Band:	<input type="text" value="2.4 GHz (B+G)"/>
SSID:	<input type="text" value="airlive"/> <input type="button" value="Site Survey"/>
SSID of Extended Interface:	<input type="text"/>
Enable Encryption On:	<input type="text" value="Both WAN and WLAN side"/>
Security:	<input type="button" value="Setup"/>
Advanced Settings:	<input type="button" value="Setup"/> <b>Repeater Mode Settings</b>
Wan Port:	<input type="button" value="Setup"/> <b>Router Settings</b>
Virtual Server:	<input type="button" value="Setup"/>
Special Application:	<input type="button" value="Setup"/>
DMZ:	<input type="button" value="Setup"/>
Remote Management:	<input type="button" value="Setup"/>
Traffic Control(QoS):	<input type="button" value="Setup"/>

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.
- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

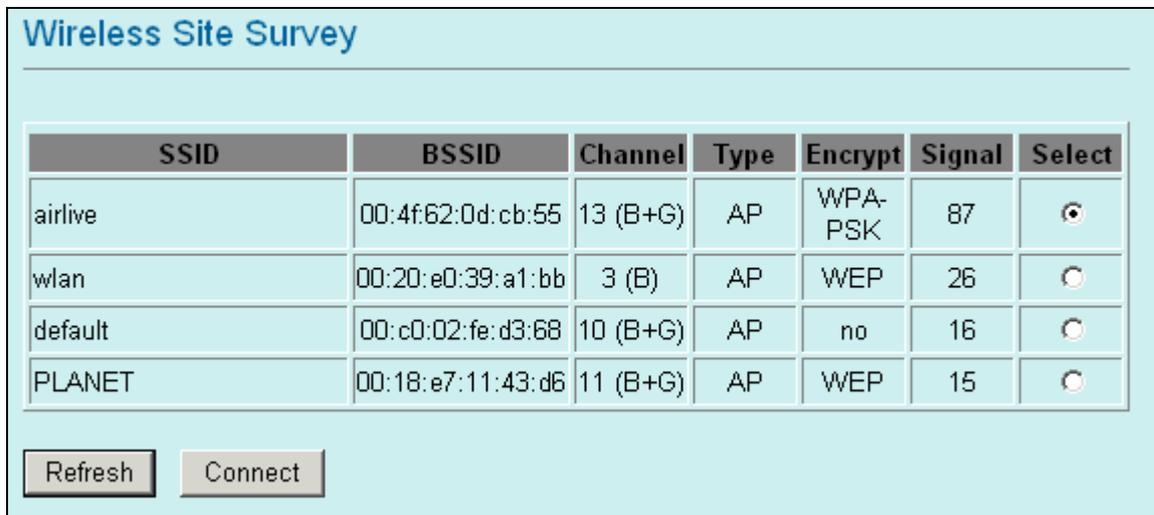
The default is 2.4GHz (B+G) mode.

- **SSID (Network ID):** The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also

referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is the remote WISP CPE to connect to.

- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.



The image shows a screenshot of a 'Wireless Site Survey' interface. It features a table with the following columns: SSID, BSSID, Channel, Type, Encrypt, Signal, and Select. Below the table are two buttons: 'Refresh' and 'Connect'.

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

- **SSID of Extended Interface:** This field is the SSID of remote Access Point to connect to.
- **WAN Port:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “Auto” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **WAN Port:** WL-5460AP provides 4 methods for client to access the internet. This depends on the location and the service which the ISP provides. You need to contact the ISP for detail information.

### WAN Port Configuration

**WAN Access Type:** Static IP DHCP Client PPPoE PPTP L2TP

**DNS 1:**

**DNS 2:**

**DNS 3:**

**Clone MAC Address:**

Respond to WAN Ping  
 Enable UPnP  
 Enable IPsec pass through on VPN connection  
 Enable PPTP pass through on VPN connection  
 Enable L2TP pass through on VPN connection

- **Virtual Server:** You can use Virtual Server Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.

### Virtual Servers

Enable Virtual Servers

**Servers:** New

**Local IP Address:**

**Protocol:** New Web FTP E-Mail(POP3) E-Mail(SMTP) DNS Telnet

**Port Range:**

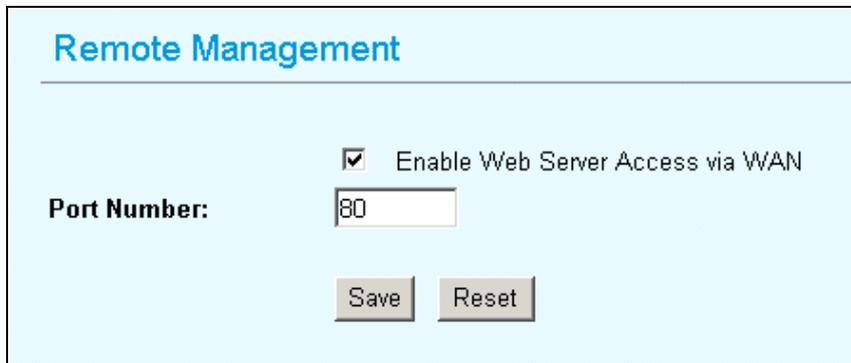
**Description:**

**Current Virtual Servers Table:**

Local IP Address	Protocol	Port Range	Description	Select
<input type="button" value="Delete Selected"/> <input type="button" value="Delete All"/> <input type="button" value="Reset"/>				

- **Special Application:** This is to enable internet service such as sound, video and so on. The routing firewall often stops these services for security reason.

- **DMZ:** You can use DMZ Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.
- **Remote Management:** This is to configure WL-5460AP be managed from internet. Note that port 80 is always used by web service. You can change the port to prevent conflict.



**Remote Management**

Enable Web Server Access via WAN

Port Number:

To configure the security connection, please refer to **Section 3.9 Wireless Security Settings** .....

To configure the Advanced Settings, please refer to **Section 3.10 Advanced Wireless Settings** .....

To configure the access control, please refer to **Section 3.11 Access Control Settings** .....

To configure the Traffic Control, please refer to **Section 3.12 Access Control Settings** .....

## 3.8 Gateway Mode (AP + Router) Settings

**Important Notice: When change to Gateway mode, the LAN 2 becomes to WAN port.**

### GW Mode Settings

---

Alias Name:	<input type="text" value="Wireless_AP"/>
<input type="checkbox"/> Disable Wireless LAN Interface	
Band:	<input type="text" value="2.4 GHz (B+G)"/>
SSID:	<input type="text" value="airlive"/> <input type="button" value="Site Survey"/>
Channel Number:	<input type="text" value="13"/>
Wireless Client Isolation:	<input type="text" value="Disabled"/>
Security:	<input type="button" value="Setup"/>
Advanced Settings:	<input type="button" value="Setup"/>
Access Control:	<input type="button" value="Setup"/>

**AP Mode Settings**

---

Wan Port:	<input type="button" value="Setup"/>
Virtual Server:	<input type="button" value="Setup"/>
Special Application:	<input type="button" value="Setup"/>
DMZ:	<input type="button" value="Setup"/>
Remote Management:	<input type="button" value="Setup"/>
Dynamic DNS:	<input type="button" value="Setup"/>
Ping:	<input type="button" value="Setup"/>
DoS Setting:	<input type="button" value="Setup"/>
Diagnostics:	<input type="button" value="Setup"/>
URL Filtering:	<input type="button" value="Setup"/>
MAC Filtering:	<input type="button" value="Setup"/>
IP Filtering:	<input type="button" value="Setup"/>
Traffic Control(QoS):	<input type="button" value="Setup"/>

**Router Settings**

---

<input type="button" value="Apply Changes"/>	<input type="button" value="Reset"/>
--	--------------------------------------

- **Alias Name:** Another name for WL-5460AP.
- **Disable Wireless LAN Interface:** Check the box to disable the Wireless LAN Interface, by so doing, you won't be able to make wireless connection with this Access Point in the network you are located. In other words, this device will not be visible by any wireless station.

- **Band:** You can choose one mode of the following you need.
  - ⊙ 2.4GHz (B): 802.11b supported rate only.
  - ⊙ 2.4GHz (G): 802.11g supported rate only.
  - ⊙ 2.4GHz (B+G): 802.11b supported rate and 802.11g supported rate.

The default is 2.4GHz (B+G) mode.

- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.

Wireless Site Survey						
SSID	BSSID	Channel	Type	Encrypt	Signal	Select
airlive	00:4f:62:0d:cb:55	13 (B+G)	AP	WPA-PSK	87	<input checked="" type="radio"/>
wlan	00:20:e0:39:a1:bb	3 (B)	AP	WEP	26	<input type="radio"/>
default	00:c0:02:fe:d3:68	10 (B+G)	AP	no	16	<input type="radio"/>
PLANET	00:18:e7:11:43:d6	11 (B+G)	AP	WEP	15	<input type="radio"/>

Refresh    Connect

- **SSID (Network ID):** The SSID differentiates one WLAN from another; therefore, all access points and all devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because essentially it is a name that identifies a wireless network.

In this mode, the SSID is provided for client connection.

- **Channel Number:** Allow user to set the channel manually or automatically. If set channel manually, just select the channel you want to specify. If “Auto” is selected, user can set the channel range to have Wireless Access Point automatically survey and choose the channel with best situation for communication. The number of channels supported depends on the region of this Access Point. All stations communicating with the Access Point must use the same channel.
- **Wireless Client Isolation:** This is to separate wireless client if needed. Wireless clients can not communicate to each other if the field is enabled.
- **Site Survey:** Site survey helps to find out available access point around. You can also check to prevent using same SSID or channel with other AP.
- **WAN Port (LAN2):** WL-5460AP provides 4 methods for client to access the internet. This depends on the location and the service which the ISP provides. You need to contact the ISP for detail information.

### WAN Port Configuration

**WAN Access Type:** DHCP Client  

 Static IP  
**DHCP Client**  
 PPPoE  
 PPTP  
 L2TP
  automatically

**DNS 1:**

**DNS 2:**

**DNS 3:**

**Clone MAC Address:**

Respond to WAN Ping  
 Enable UPnP  
 Enable IPsec pass through on VPN connection  
 Enable PPTP pass through on VPN connection  
 Enable L2TP pass through on VPN connection

- **Virtual Server:** You can use Virtual Server Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.

### Virtual Servers

Enable Virtual Servers

**Servers:** New

**Local IP Address:**

**Protocol:** 
 New  
 Web  
 FTP  
 E-Mail(POP3)  
 E-Mail(SMTP)  
 DNS  
 Telnet

**Port Range:**

**Description:**

**Current Virtual Servers Table:**

Local IP Address	Protocol	Port Range	Description	Select
<input type="button" value="Delete Selected"/> <input type="button" value="Delete All"/> <input type="button" value="Reset"/>				

- **Special Application:** This is to enable internet service such as sound, video and so on. The routing firewall often stops these services for security reason.

- **DMZ:** You can use DMZ Settings to provide connection on internet. For example, you can have your own web server at home and provide access on internet. This will need port 80 by default for Virtual Server Settings.
- **Remote Management:** This is to configure WL-5460AP be managed from internet. Note that port 80 is always used by web service. You can change the port to prevent conflict.
- **Dynamic DNS:** Dynamic DNS (DDNS) allows you to create a hostname that points to your dynamic IP or static IP address or URL. WL-5460AP provide Dynamic DNS client using DynDNS, please visit <http://www.dyndns.org> for detail.
- **Ping:** You can enable to the “Response to WAN Ping” to allow remotely ping your WL-5460AP.
- **DoS Setting:** In WL5460AP, a denial-of-service attack (DoS attack) can block or limit the system sending network flood to your local computer.
- **Diagnostics:** The nslookup command can be used in diagnostics to find the IP addresses of a particular computer, using DNS lookup. The name means "name server lookup". The most common version of the program is included as part of the BIND package.
- **URL Filtering:** The URL filter database is used for internet filtering that blocks access to unwanted web content by URLs.
- **MAC Filtering:** Enables you to allow or deny Internet access to users within the LAN based upon the MAC address of their network interface.
- **IP Filtering:** The IP filter function enables you to define a minimum and maximum IP address range filter; all IP addresses falling within the range are not allowed Internet access

**To configure the security connection, please refer to Section 3.9 Wireless Security Settings .....**

**To configure the Advanced Settings, please refer to Section 3.10 Advanced Wireless Settings .....**

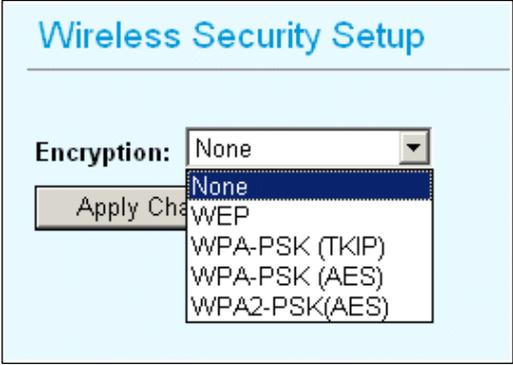
**To configure the access control, please refer to Section 3.11 Access Control Settings .....**

**To configure the Traffic Control, please refer to Section 3.12 Access Control Settings .....**

## 3.9 Wireless Security

Here you can configure the security of your wireless network. Selecting different method will enable you to have different level of security. Please note that by using any encryption, by which data packet is encrypted before transmission to prevent data packets from being eavesdropped by unrelated people, there may be a significant degradation of the data throughput on the wireless link.

WL-5460AP provides WEP, WPA-PSK (TKIP), WPA2-PSK (AES) and WPA2-PSK (AES) security policy.



The screenshot shows the 'Wireless Security Setup' page. The 'Encryption' dropdown menu is open, displaying the following options: None, WEP, WPA-PSK (TKIP), WPA-PSK (AES), and WPA2-PSK(AES). The 'None' option is currently selected. An 'Apply Changes' button is visible to the left of the dropdown.

### WEP

WEP allows you to use data encryption to secure your data from being eavesdropped by malicious people. It allows 2 types of key: 64 (WEP64) and 128 (WEP128). You can



The screenshot shows the 'Wireless Security Setup' page with WEP selected. The configuration options are as follows:

- Encryption: WEP
- Authentication Type: Open System or Shared Key
- Key Length: 64-bit
- Key Format: Hex (10 characters)
- Default Tx Key: Key 1
- Encryption Key 1: [Redacted]
- Encryption Key 2: [Redacted]
- Encryption Key 3: [Redacted]
- Encryption Key 4: [Redacted]

Buttons for 'Apply Changes' and 'Reset' are located at the bottom of the form.

configure up to 4 keys using either ASCII or Hexadecimal format.

**Key Settings:** The length of a WEP64 key must be equal to 5 bytes and a WEP128 key is 13 bytes

**Default Tx Key:** You have to specify which of the four keys will be active. Once you enable the WEP function, please make sure that both the WL-5460AP and the wireless client

stations use the same key.

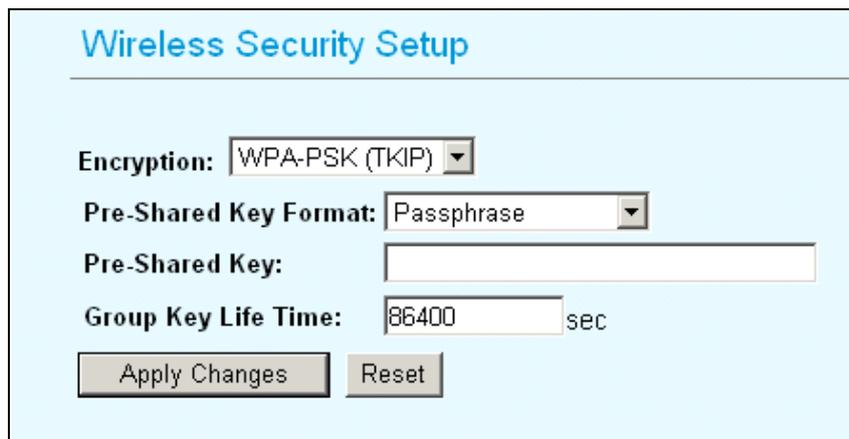


Some wireless client cards only allow Hexadecimal digits for WEP keys. Please note that when configuring WEP keys, a WEP128 ASCII key looks like “**This is a key**”(13 characters), while a WEP128 Hex key looks like “**546869732069732061206b6579**”(26 HEX) (hexadecimal notation are 0-9 and A-F).

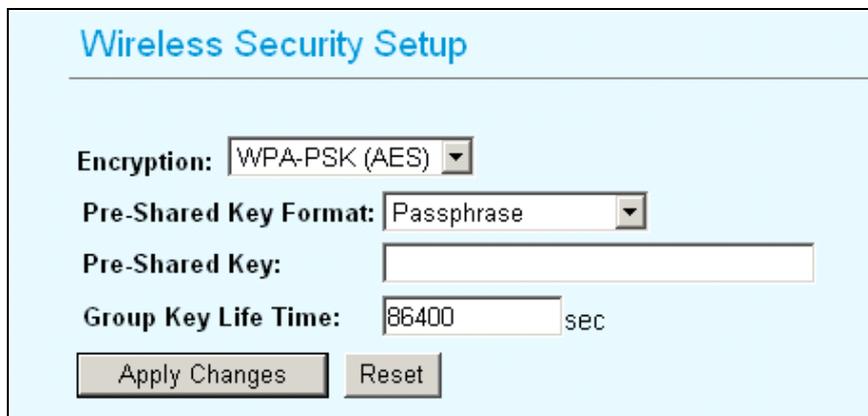
## WPA-PSK (TKIP) / WPA-PSK (AES)

**Wi-Fi Protected Access (WPA) with Pre-Shared Key (PSK)** provides better security than WEP keys. It does not require a RADIUS server in order to provide association authentication, but you do have to enter a shared key for the authentication purpose. The encryption key is generated automatically and dynamically.

There are two encryption types **TKIP** and **CCMP (AES)**. While CCMP provides better security than TKIP, some wireless client stations may not be equipped with the hardware to support it.



The screenshot shows the 'Wireless Security Setup' configuration page. The 'Encryption' dropdown is set to 'WPA-PSK (TKIP)'. The 'Pre-Shared Key Format' dropdown is set to 'Passphrase'. The 'Pre-Shared Key' field is empty. The 'Group Key Life Time' is set to '86400' seconds. There are 'Apply Changes' and 'Reset' buttons at the bottom.



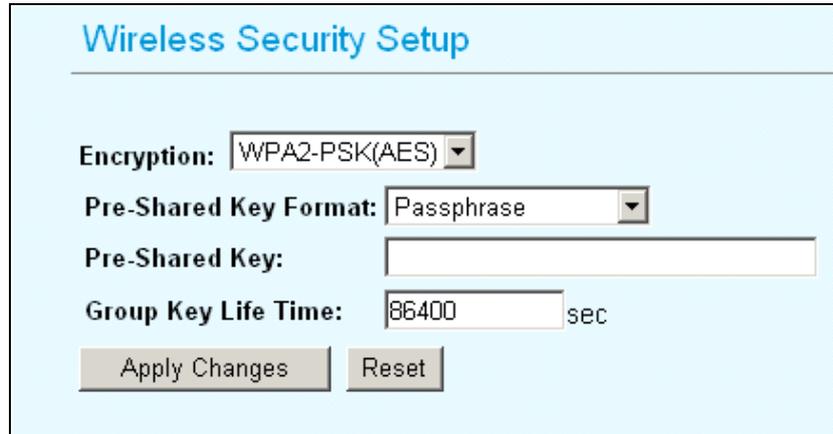
The screenshot shows the 'Wireless Security Setup' configuration page. The 'Encryption' dropdown is set to 'WPA-PSK (AES)'. The 'Pre-Shared Key Format' dropdown is set to 'Passphrase'. The 'Pre-Shared Key' field is empty. The 'Group Key Life Time' is set to '86400' seconds. There are 'Apply Changes' and 'Reset' buttons at the bottom.

**Pre-shared Key:** This is an ASCII string with 8 to 63 characters. Please make sure that both the WL-5460AP and the wireless client stations use the same key.

**Group Key Life Time:** A group key is used for multicast/broadcast data, and the re-key interval is time period that the system will change the group key periodically. The shorter the interval is, the better the security is. The default is 300 sec.

## WPA2-PSK (AES)

Enter the Pre-shared Key to initiate WPA2 security. All devices try to access the network should have the matching encryption key.



The image shows a screenshot of a web-based configuration interface titled "Wireless Security Setup". The interface is light blue and contains the following fields and buttons:

- Encryption:** A dropdown menu with "WPA2-PSK(AES)" selected.
- Pre-Shared Key Format:** A dropdown menu with "Passphrase" selected.
- Pre-Shared Key:** An empty text input field.
- Group Key Life Time:** A text input field containing "86400" followed by "sec".
- Buttons:** "Apply Changes" and "Reset".

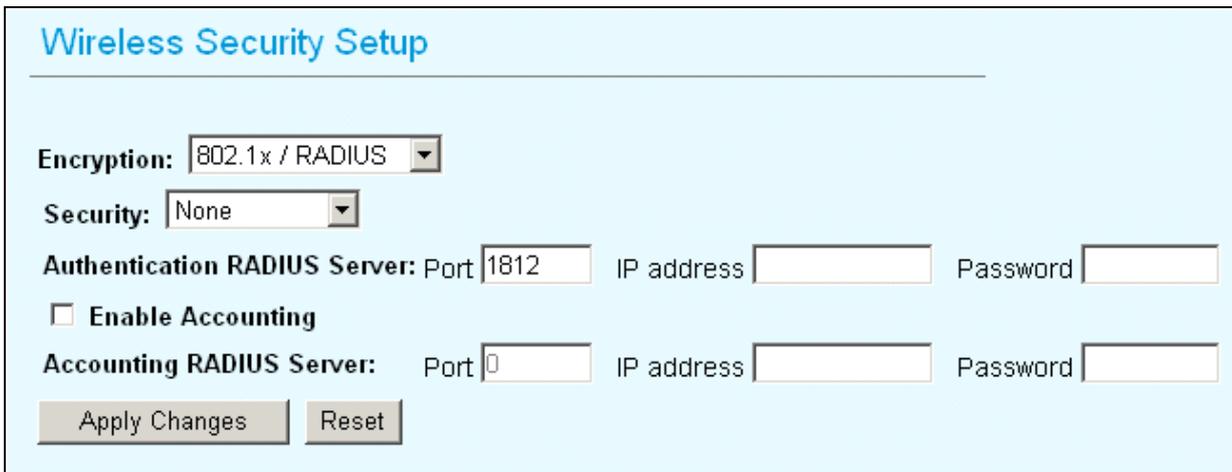
**Pre-shared Key:** This is an ASCII string with 8 to 63 characters. Please make sure that both the WL-5460AP and the wireless client stations use the same key.

**Encryption Type:** There are two encryption types **TKIP** and **CCMP (AES)**. While CCMP provides better security than TKIP, some wireless client stations may not be equipped with the hardware to support it.

**Group key Life Time:** A group key is used for multicast/broadcast data, and the re-key interval is time period that the system will change the group key periodically. The shorter the interval is, the better the security is. The default is 300 sec.

## 802.1X (Radius)

Authentication by the remote server (RADIUS Server).



**Wireless Security Setup**

Encryption: 802.1x / RADIUS

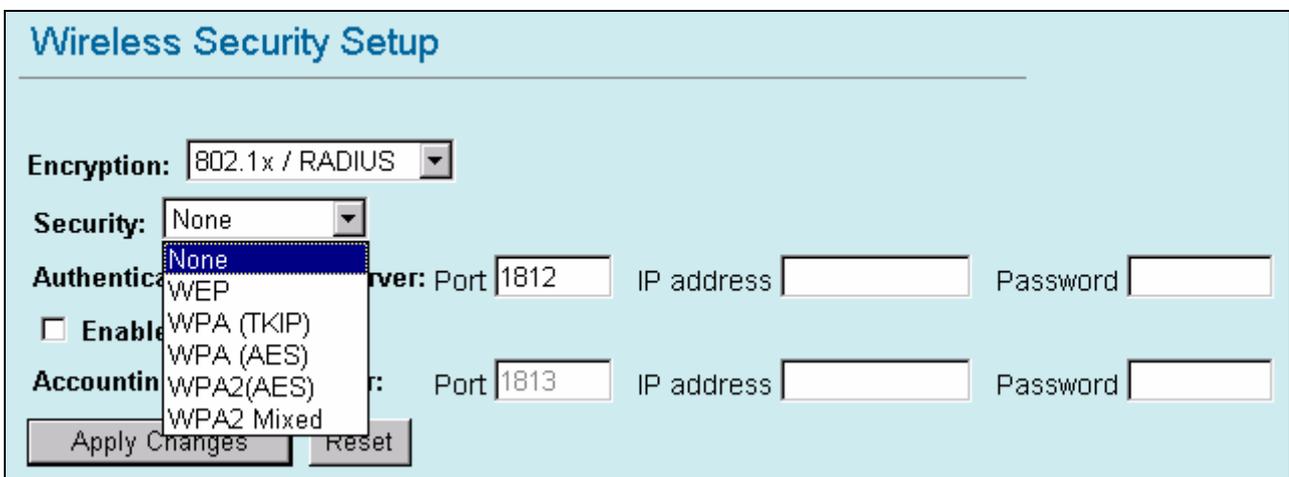
Security: None

Authentication RADIUS Server: Port 1812 IP address Password

Enable Accounting

Accounting RADIUS Server: Port 0 IP address Password

Apply Changes Reset



**Wireless Security Setup**

Encryption: 802.1x / RADIUS

Security: None

Authentication RADIUS Server: Port 1812 IP address Password

Enable Accounting

Accounting RADIUS Server: Port 1813 IP address Password

Apply Changes Reset

**Security:** You can select None, WEP, WPA (TKIP), WPA (AES), WPA2 (AES), WPA2 Mixed method for data encryption.

- ⦿ **WEP:** 802.1x Authentication is enabled and the RADIUS Server will proceed to check the 802.1x Authentication, and make the RADIUS server to issue the WEP key dynamically. You can select WEP 64bits or WEP 128bits for data encryption.
- ⦿ **WPA (TKIP) / WPA (AES):** WPA-RADIUS authentication use WPA (Wi-Fi Protect Access) data encryption for 802.1x authentication. WPA is an encryption standard proposed by WiFi for advance protection by utilizing a password key (TKIP) or certificate. It is more secure than WEP encryption.
- ⦿ **WPA2-AES / WPA2-Mixed:** The two most important features beyond WPA to become standardized through 802.11i/WPA2 are: pre-authentication, which enables secure fast roaming without noticeable signal latency. Pre-authentication provides a way to establish a PMK security association before a client associates. The advantage is that the client reduces the time that it's disconnected to the network.

**Authentication RADIUS Server:** Enter the RADIUS Server IP address and Password provided by your ISP.

- ⦿ **Port:** Enter the RADIUS Server's port number provided by your ISP. The default is 1812.
- ⦿ **IP Address:** Enter the RADIUS Server's IP Address provided by your ISP.
- ⦿ **Password:** Enter the password that the AP shares with the RADIUS Server.

**Accounting RADIUS Server:** Enter the Accounting RADIUS Server IP address and Password provided by your ISP.

## 3.10 Advanced Wireless Settings

When click on Advanced Setup button under client mode, a pop-up window appears and show parameter as follow:

### Fragmentation:

Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If your 802.11g Wireless LAN PC Card often transmit large files in wireless network, you can enter new Fragment Threshold value to split the packet. The value can be set from 256 to 2346. The default value is 2346.

### Wireless Advanced Settings

Fragment Threshold:	<input type="text" value="2346"/>	(256-2346)
RTS Threshold:	<input type="text" value="2347"/>	(0-2347)
Beacon Interval:	<input type="text" value="100"/>	(20-1024 ms)
Inactivity Time:	<input type="text" value="50000"/>	(101-60480000 10ms)
Data Rate:	<input type="text" value="Auto"/>	
Preamble Type:	<input checked="" type="radio"/> Long Preamble <input type="radio"/> Short Preamble	
Broadcast SSID:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	
IAPP:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	
802.11g Protection:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	
Tx Power Level:	<input type="text" value="Default (About 18dB)"/>	
<input type="checkbox"/> Enable WatchDog		
Watch Interval:	<input type="text" value="1"/>	(1-60 minutes)
Watch Host:	<input type="text" value="0.0.0.0"/>	
Ack timeout:	<input type="text" value="0"/>	(0-255, 0:Auto adjustment, Unit: 4µsec)
<input type="button" value="Set Default"/>		
<input type="button" value="Apply Changes"/> <input type="button" value="Reset"/>		

**RTS Threshold:** RTS Threshold is a mechanism implemented to prevent the “**Hidden Node**” problem. “Hidden Node” is a situation in which two stations are within range of the same Access Point, but are not within range of each other. Therefore, they are hidden nodes for each other. When a station starts data transmission with the Access Point, it might not notice that the other station is already using the wireless medium. When these two stations send data at the same time, they might collide when arriving simultaneously at the Access Point. The collision will most certainly result in a loss of messages for both stations.

Thus, the RTS Threshold mechanism provides a solution to prevent data collisions. When you enable RTS Threshold on a suspect “hidden station”, this station and its Access Point will use a Request to Send (RTS). The station will send an RTS to the Access Point, informing that it is going to transmit the data. Upon receipt, the Access Point will respond with a CTS message to all station within its range to notify all other stations to defer

transmission. It will also confirm the requestor station that the Access Point has reserved it for the time-frame of the requested transmission.

If the "Hidden Node" problem is an issue, please specify the packet size. The RTS mechanism will be activated if the data size exceeds the value you set..

The default value is 2347.

**Warning:** Enabling RTS Threshold will cause redundant network overhead that could negatively affect the throughput performance instead of providing a remedy.

This value should remain at its default setting of 2347. Should you encounter inconsistent data flow, only minor modifications of this value are recommended.

**Beacon Interval:** Beacon Interval is the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon (and learn whether there are buffered frames at the access point).

**Data Rate:** By default, the unit adaptively selects the highest possible rate for transmission. Select the basic rates to be used among the following options: Auto, 1, 2, 5.5, 11 or 54 Mbps. For most networks the default setting is Auto which is the best choice. When Auto is enabled the transmission rate will select the optimal rate. If obstacles or interference are present, the system will automatically fall back to a lower rate.

**Preamble Type:** A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. In a "noisy" network environment, the Preamble Type should be set to Long Preamble. The Short Preamble is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance will be decreased.

**Broadcast SSID:** Select enabled to allow all the wireless stations to detect the SSID of this Access Point.

**IAPP:** IAPP (Inter Access Point Protocol) is designed for the enforcement of unique association throughout a ESS (Extended Service Set) and a secure exchange of station's security context between current access point (AP) and new AP during handoff period.

**802.11g Protection:** The 802.11g standard includes a protection mechanism to ensure mixed 802.11b and 802.11g operation. If there is no such kind of mechanism exists, the two kinds of standards may mutually interfere and decrease network's performance.

**Tx Power Level:** For countries that impose limit on WLAN output power, it might be necessary to reduce TX (transmit) power. There are 7 TX Power Levels to choose from —

select a level to make sure that the output power measured at the antenna end will not exceed the legal limit in your country.

**Enable WatchDog:** Check and enable this watch dog function.

**Watch Interval:** Setup the interval time for watch dog function between 1 to 60 mins.

**Watch Host:** Enter the watch dog host ip address.

**Ack timeout:** When a packet is sent out from one wireless station to the other, it will wait for an Acknowledgement frame from the remote station. If the ACK is NOT received within that timeout period then the packet will be re-transmitted resulting in reduced throughput. If the ACK setting is too high then throughput will be lost due to waiting for the ACK Window to timeout on lost packets. By having the ability to adjust the ACK setting we can effectively optimize the throughput over long distance links. This is especially true for 802.11a and 802.11g networks

You can set as default for auto adjustment.

## 3.11 Access Control

When Enable Wireless Access Control is checked, only those clients whose wireless MAC addresses listed in the access control list can access this Access Point. If the list contains no entries with this function being enabled, then no clients will be able to access this Access Point.

### Wireless Access Control

**Wireless Access Control Mode:**

**MAC Address:**  **Comment:**

**Current Access Control List:**

MAC Address	Comment	Select
-------------	---------	--------

**Wireless Access Control Mode:** Select the Access Control Mode from the pull-down menu.

- Ⓐ **Disable:** Select to disable Wireless Access Control Mode.
- Ⓐ **Allow Listed:** Only the stations shown in the table can associate with the AP.
- Ⓐ **Deny Listed:** Stations shown in the table won't be able to associate with the AP.

**MAC Address:** Enter the MAC Address of a station that is allowed to access this Access Point.

**Comment:** You may enter up to 20 characters as a remark to the previous MAC Address.

## 3.12 QoS Traffic Control

### What is Traffic Control QoS?

Traffic Control is a great tool to control the bandwidth of the WISP subscribers. Therefore, the WISP operators can offer different class of connection speeds for different subscription fees - just the ADSL service! The AirLive advance firmware can control the bandwidth by Interface or IP/MAC.

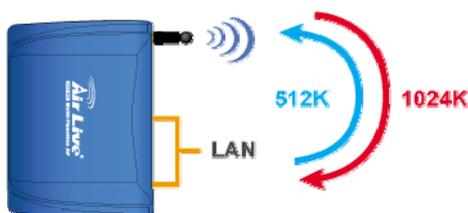


### What type of Traffic Bandwidth Control does the E11 firmware offer?

The E11 firmware's Traffic Bandwidth limits the "Maximum Data Rate". There are 2 types of Traffic Control it offers.

#### Interface Control

##### Interface Traffic Control

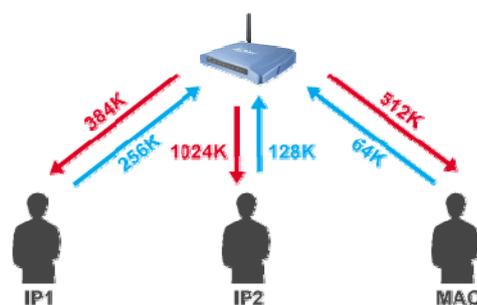


The interface QoS controls the data rate at the WLAN and LAN interfaces. Therefore, all traffics are controlled the same way. This type of traffic control is suitable when AP is used as a Client AP in "Client Mode" and WISP mode. So WISP can control the maximum data rate

#### Individual IP/MAC Control

The AP can set the maximum data rate for each IP or MAC addresses. This type of traffic control is most suitable for outdoor AP in "AP" or "Gateway" mode.

##### Individual IP/MAC Control

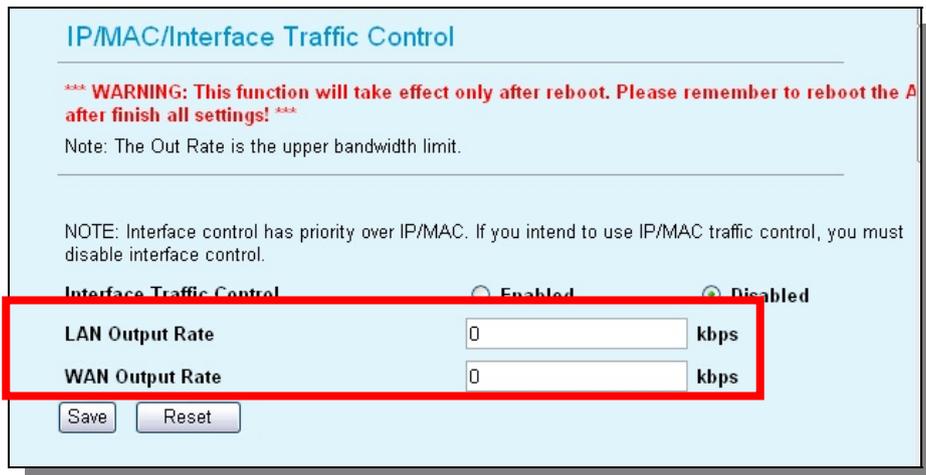


### What is the Output Rate?

The "Output Rate" is the data speed out of an interface. There are 3 types Output Rate supported by the AP

1. **LAN Output Rate**: This is the speed of the traffic out of the LAN port. In gateway mode, the LAN Output Rate includes both the wired LAN and WLAN interface.
2. **WLAN Output Rate**: This is the speed of the traffic out of the Wireless LAN
3. **WAN Output Rate**: This is the speed of the traffic out of the WAN port. In WISP mode, the WAN Output Rate also includes the WLAN interface.

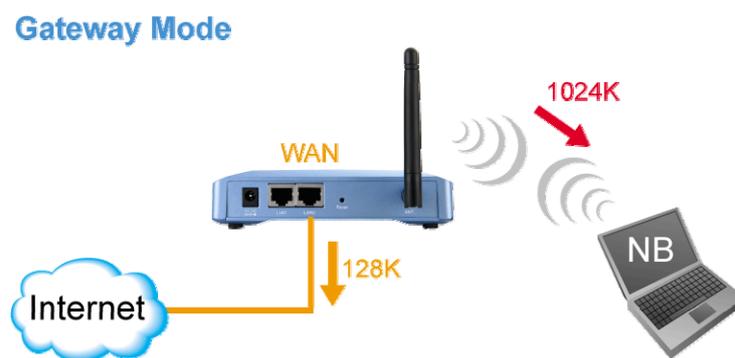
The AP's Web UI will tell you which types of output rate it supports, it differs in each wireless mode.



In the following example:

- The AP is in Gateway Mode
- The WAN Output Rate is 128K
- The LAN/WLAN Output Rate is 1024K

In this setup, the notebook users get an upstream bandwidth of 128K and downstream bandwidth of 1024K.



## Configure the Traffic Control QoS

From the Mode Setting page, please choose the "Traffic Control(QoS)" on the bottom of the list.

### AP Mode Settings

Alias Name:

Disable Wireless LAN Interface

Band:

SSID:

Channel Number:

Wireless Client Isolation:

Security:

Advanced Settings:

Access Control:

**Traffic Control (QoS):**

Once you click on the “setup” button, a new window will pop-up with the Traffic Control settings. They are divided into “A”, “B”, “C”, “D” section for further explanations.

#### IP/MAC/Interface Traffic Control

**\*\*\* WARNING: This function will take effect only after reboot. Please remember to reboot the AP after finish all settings! \*\*\***  
 Note: The Out Rate is the upper bandwidth limit.

NOTE: Interface control has priority over IP/MAC. If you intend to use IP/MAC traffic control, you must disable interface control.

Interface Traffic Control  Enabled  Disabled

LAN Output Rate  **A**  kbps

WLAN Output Rate   kbps

Policy Name  LAN Out Rate  kbps WLAN Out Rate  kbps Comment

**B**

Current Policy Table:

Policy Name	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
<input type="text"/>				

Note: Only the Wireless LAN side client IPs are supported.

Enable IP control

Policy Name  IP  LAN Out Rate  kbps WLAN Out Rate  kbps Comment

**C**

Current IP control table:

Policy Name	IP Addr	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
<input type="text"/>					

Note: Only the Wireless LAN side client MACs are supported.

Enable MAC control

Policy Name  MAC  LAN Out Rate  kbps WLAN Out Rate  kbps Comment

**D**

Current MAC control table:

Policy Name	MAC	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
<input type="text"/>					

This section is the “Interface Control” session. You must disable the “interface Traffic Control” if you want to use the “IP/MAC Traffic Control”

This section is for defining the “Policy” of “Individual IP/MAC Traffic Control”. Once a policy is defined, it can be chosen as template in IP/MAC Traffic Control Settings

This section is to configure the bandwidth by IP address. You can control more than one IP address.

This section is to configure the bandwidth by MAC address. You can control more than one MAC address.

## A. Interface Control Settings:

**\*\*\* WARNING: This function will take effect only after reboot. Please remember to reboot the AP after finish all settings! \*\*\***

Note: The Out Rate is the upper bandwidth limit.

---

NOTE: Interface control has priority over IP/MAC. If you intend to use IP/MAC traffic control, you must disable interface control.

**Interface Traffic Control**       Enabled       Disabled

**LAN Output Rate**       kbps

**WLAN Output Rate**       kbps

In the Interface Control Settings, the AP only controls the total bandwidth limit of an interface. For example, if you want to limit the output data rate of the LAN to 512K and the output data rate of WLAN to 1024K. You should perform the following steps:

1. Enable the "Interface Traffic Control"
2. Enter "512" in the "LAN Output Rate"
3. Enter "1024" in the "WLAN Output Rate"
4. Click on "Save"
5. Reboot the AP.

Interface Traffic Control

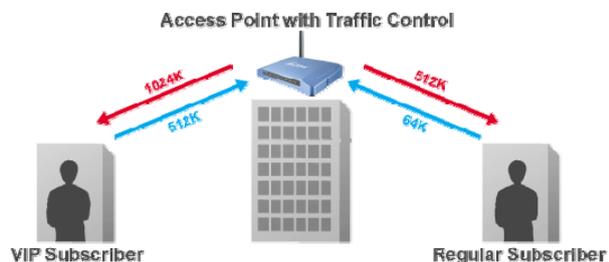


## B. Define Policy

A policy is a set of bandwidth rules that can be used as a template. For example, if you want to provide 2 kinds of bandwidth speed to the users:

- VIP Subscriber:
  - LAN Out Rate: 512 Kbps
  - WLAN Out Rate: 1024 Kbps
- Regular Subscriber:
  - LAN Out Rate: 64 Kbps
  - WLAN Out Rate: 512 Kbps

Traffic Control QoS



You can configure the bandwidth rule as policies "VIP" and "Regular".

Policy Name	LAN Out Rate	WLAN Out Rate	Comment
<input type="text" value="VIP"/>	<input type="text" value="512"/> kbps	<input type="text" value="1024"/> kbps	<input type="text" value="VIP Subscriber"/>

**Current Policy Table:**

Policy Name	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
VIP	512	1024	VIP Subscriber	<input type="checkbox"/>
Regular	64	512	Regular Subscriber	<input type="checkbox"/>

Please follow the step below to create a new policy "VIP"

1. Enter "VIP" for the "PolicyName"

2. Enter "512" for the "LAN Out Rate"
3. Enter "1024" for the "WLAN Out Rate"
4. Enter "VIP Subscriber" for the "Comment"
5. Click on "Save" button
6. Now the "VIP" policy will show up in the "Current Policy Table"

Once finished, the administrator will be able to choose the policy "VIP" for their IP/MAC Traffic Control.

### C. Bandwidth Control by IP address

You can set the maximum bandwidth of a PC or a subscriber by using the IP Control.

Please follow the procedure below to setup IP Traffic Control

1. Please make sure the "Interface Traffic Control" is disabled
2. Before you start, please check the following area to see which client IPs are supported. It differs between each mode.

Note: Only the Wireless LAN side client IPs are supported. ← Please check this part to find out what IP addresses are supported. It varies between each mode

Enable IP control

Policy Name	IP	LAN Out Rate	WLAN Out Rate	Comment
VIP	192.168.0.250	512 kbps	1024 kbps	Subscriber A

Save Reset

Current IP control table:

Policy Name	IP Addr	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
VIP	192.168.0.20	512	1024	Subscriber A	<input type="checkbox"/>

Delete Selected Delete all Reset

3. Enable the IP Control
4. If you have defined a Policy already, please choose a Policy name. The "Out Rates" will be automatically pasted from the Policy template. You cannot change the Out Rates if you have chosen a Policy
5. If you want to define new Data Rate, please do not choose any policies. Then you can enter the values in the "LAN", "WLAN", or "WAN" Out Rates.
6. Press "Save" to save settings
7. Reboot your AP.

\* If you want to control the traffic flow between the IPs in the same interface, please make sure both IPs are configured for the IP Traffic Control.

### D. Bandwidth Control by MAC address

You can set the maximum bandwidth of a PC or a subscriber by using the MAC Control.

Please follow the procedure below to setup MAC Traffic Control

1. Please make sure the "Interface Traffic Control" is disabled
2. Before you start, please check the following area to see which client MACs are supported. It differs between each mode.
3. Enable the MAC Control

Note: Only the Wireless LAN side client MACs are supported ← Please check this part to find out what IP addresses are supported. It varies between each mode

Enable MAC control

Policy Name	MAC	LAN Out Rate	WLAN Out Rate	Comment
VIP	004F60111111	512 kbps	1024 kbps	VIP Subscriber

Save Reset

Current MAC control table:

Policy Name	MAC Addr	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
VIP	00:4f:60:11:11:11	512	1024	VIP Subscriber	<input type="checkbox"/>

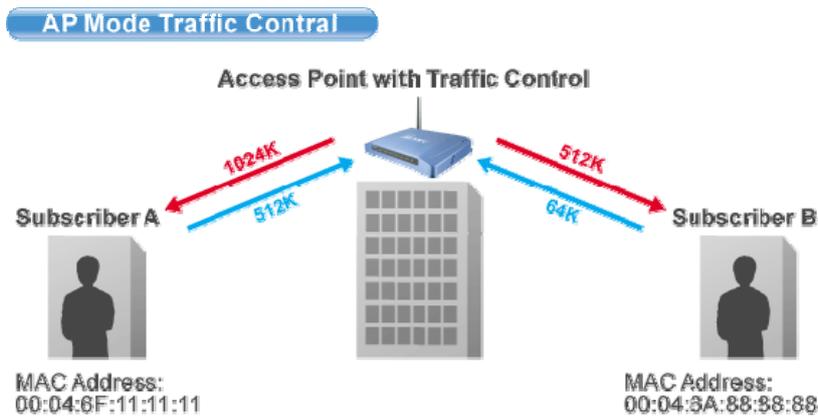
Delete Selected Delete all Reset

4. If you have defined a Policy already, please choose a Policy name. The "Out Rates" will be automatically pasted from the Policy template. You cannot change the Out Rates if you have chosen a Policy
5. If you want to define new Data Rate, please do not choose any policies. Then you can enter the values in the "LAN", "WLAN", or "WAN" Out Rates.
6. Press "Save" to save settings
7. Reboot your AP.

\* If you want to control the traffic flow between MAC addresses in the same interface, please make sure both MAC addresses are configured for the MAC Traffic Control.

# Application Example

## Example1: AP Mode Traffic Control



In this example, the AP is installed outdoor to provide Internet service. There are 2 different type of Internet service offered by the WISP:

- **VIP Service:**
  - Upstream Data Rate: 512 Kbps
  - Downstream Data Rate: 1024 Kbps
- **Regular Service:**
  - Upstream Data Rate: 64 Kbps
  - Downstream Data Rate: 512 Kbp

The Subscriber's information is as followed:

- Subscriber A
  - VIP Service
  - MAC Address of the PC or Wireless Client: 00:04:6F:11:11:11
- Subscriber B
  - Regular Service
  - MAC Address of the PC or Wireless Client: 00:04:6A:88:88:88

## Step-by-Step Configuration

1. Please disable the "Interface Traffic Control"
2. On the Policy, please add the "VIP" and "Regular" policies as shown on the graph below

Policy Name	LAN Out Rate	WLAN Out Rate	Comment
VIP	512 kbps	1024 kbps	VIP Subscriber

Save Reset

**Current Policy Table:**

Policy Name	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
VIP	512	1024	VIP Subscriber	<input type="checkbox"/>
Regular	64	512	Regular Subscriber	<input type="checkbox"/>

Delete Selected Delete all Reset

- Please enable the "MAC Control"
- Please fill in the 2 entries as shown on the graphic below

Note: Only the Wireless LAN side client MACs are supported.

Enable MAC control

Policy Name	MAC	LAN Out Rate	WLAN Out Rate	Comment
<input type="text"/>	<input type="text"/>	<input type="text"/> kbps	<input type="text"/> kbps	<input type="text"/>

Save Reset

**Current MAC control table:**

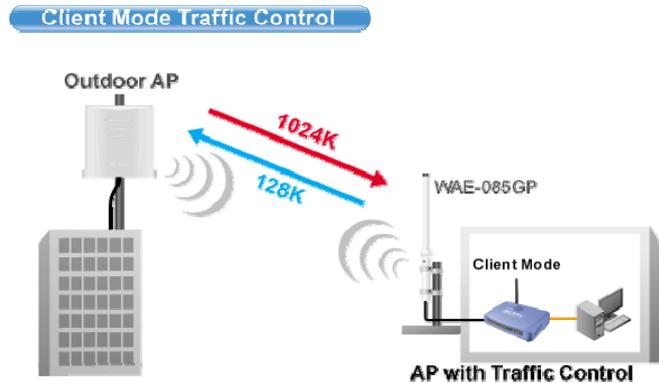
Policy Name	MAC Addr	LAN Rate (Kbps)	WLAN Rate (Kbps)	Comment	Select
VIP	00:04:6f:11:11:11	512	1024	Subscriber A	<input type="checkbox"/>
Regular	00:4f:6a:88:88:88	64	512	Subscriber B	<input type="checkbox"/>

Delete Selected Delete all Reset

- Reboot the AP

## Example2: Client Mode Traffic Control

In the following example, the AP is used as the wireless client to the WISP Service. The Service provider need to restrict the bandwidth of the AP to 1024K Downstream and 128K Upstream.



## Step-by-Step Configuration

NOTE: Interface control has priority over IP/MAC. If you intend to use IP/MAC traffic control, you must disable interface control.

<b>Interface Traffic Control</b>	<input checked="" type="radio"/> Enabled	<input type="radio"/> Disabled
<b>LAN Output Rate</b>	<input type="text" value="1024"/>	kbps
<b>WLAN Output Rate</b>	<input type="text" value="128"/>	kbps
<input type="button" value="Save"/>	<input type="button" value="Reset"/>	

1. Please enable the "Interface Traffic Control"
2. Enter "1024" in the "LAN Output Rate" field
3. Enter "128" in the "WLAN Output Rate" field
4. Press "Save"
5. Reboot the AP

# 4. System Management

## 4.1 LAN Interface Setup

In this page, you can change the TCP/IP settings of this Access Point; select to enable/disable the DHCP Client, 802.1d Spanning Tree, and Clone MAC Address.

**IP Address:** This field can be modified only when DHCP Client is disabled. If your system manager assigned you static IP settings, then you will have to enter the information provided.

**Subnet Mask:** Enter the information provided by your system manager.

**Default Gateway:** Enter the information provided by your system manager.

**DHCP:** Select Disable, Client or Server from the pull-down menu.

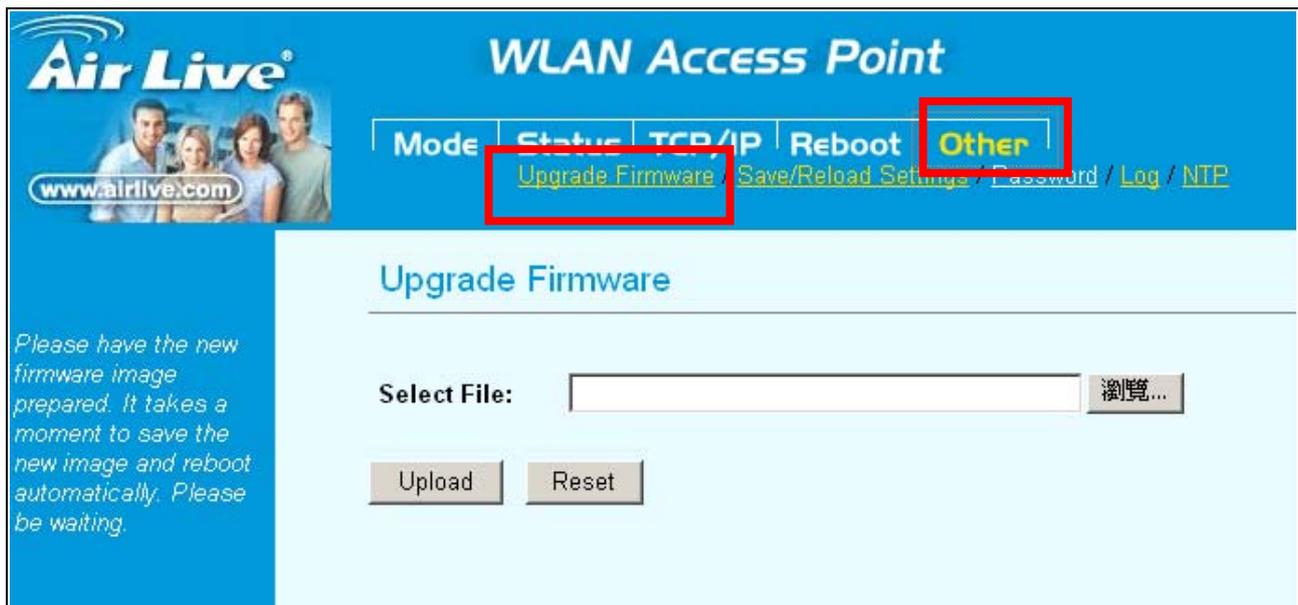
- ⊙ **Disable:** Select to disable DHCP server function.
- ⊙ **Client:** Select to automatically get the LAN port IP address from ISP (For ADSL/Cable Modem).
- ⊙ **Server:** Select to enable DHCP server function.

**DHCP Client Range:** WL-5060AP IP addresses continuing from 192.168.100.1 to 192.168.100.253

**DNS Server:** Enter the Domain Name Service IP address.

**Clone MAC Address:** You can specify the MAC address of your Access Point to replace the factory setting.

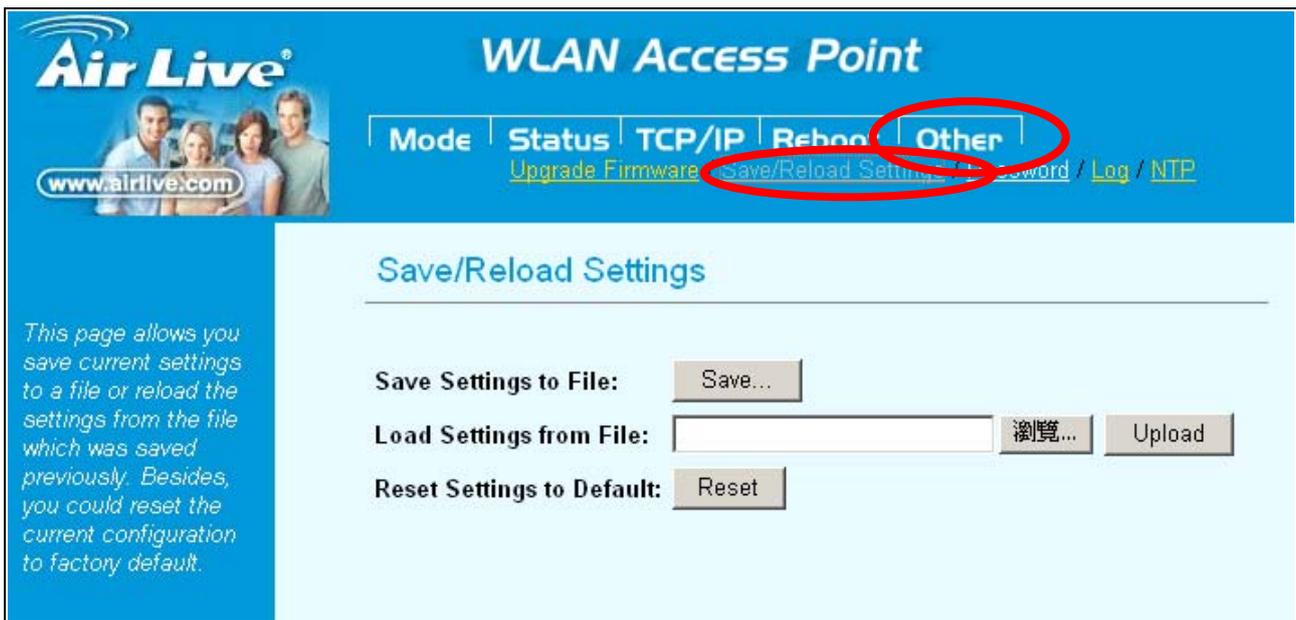
## 4.2 Upgrade Firmware



To Upgrade Firmware:

1. Download the latest firmware from your distributor and save the file on the hard drive.
2. Start the browser, open the configuration page, click on **Other**, and click “**Upgrade Firmware**” to enter the Upgrade Firmware window. Enter the new firmware’s path and file name (i.e. C:\FIRMWARE\firmware.bin). Or, click the “**Browse**” button, find and open the firmware file (the browser will display to correct file path).
3. Click Reset to clear all the settings on this page. Or click Upload to start the upgrade.

## 4.3 Save / Reload Settings



This function enables users to save the current configurations as a file (i.e. config.dat) To load configuration from a file, enter the file name or click Browse... to find the file from your computer.

Save Settings to File: Click **“SAVE”** to save the current configuration to file.



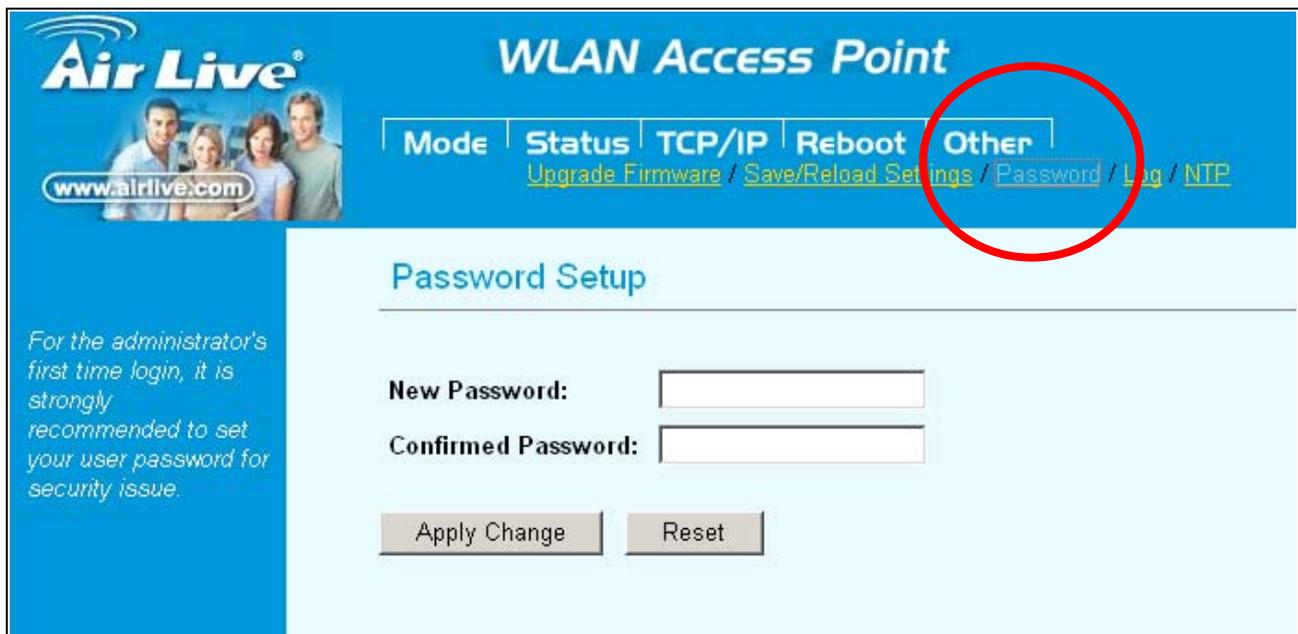
When prompted the upper left screen, select **“Save this file to disk”**, and the upper right screen will prompt you a dialog box to enter the file name and the file location.

Load Settings From File: Click **“Browse”**... if you want to load a pre-saved file, enter the file name with the correct path and then click on Upload. Or click Browse... to select the file.

**Reset:** Click to restore the default configuration.

## 4.4 Change Password

For secure reason, it is recommended that you set the account to access the web server of this Access Point. Leaving the user name and password blank will disable the protection. The login screen prompts immediately once you finish setting the account and password. Remember your user name and password for you will be asked to enter them every time you access the web server of this Access Point.



The screenshot shows the Air Live WLAN Access Point web interface. The top navigation bar includes 'Mode', 'Status', 'TCP/IP', 'Reboot', and 'Other'. The 'Other' menu is circled in red and contains links for 'Upgrade Firmware', 'Save/Reload Settings', 'Password', 'Log', and 'NTP'. The main content area is titled 'Password Setup' and contains two input fields: 'New Password:' and 'Confirmed Password:'. Below the fields are 'Apply Change' and 'Reset' buttons. A sidebar on the left contains the Air Live logo, a family photo, the website 'www.airlive.com', and a note: 'For the administrator's first time login, it is strongly recommended to set your user password for security issue.'

**New Password:** Set your new password. Password can be up to 30 characters long. Password can contain letter, number and space. It is case sensitive.

**Confirm Password:** Re-enter the new password for confirmation.

## 4.5 Enable System Log

This function can list all log information about device.

The screenshot shows the 'System Log' configuration page in the Air Live WLAN Access Point web interface. The page has a blue header with the 'Air Live' logo and 'WLAN Access Point' title. Navigation tabs include 'Mode', 'Status', 'TCP/IP', 'Reboot', and 'Other'. Under 'Status', there are links for 'Upgrade Firmware', 'Save/Reload Settings', 'Password', 'Log', and 'NTP'. The main content area is titled 'System Log' and contains the following text: 'This page can be used to set remote log server and show the system log.' Below this text are three checkboxes: 'Enable Log' (unchecked), 'System all' (unchecked), and 'Wireless only' (unchecked). An 'Apply Changes' button is located below these checkboxes. A large empty text area with a vertical scrollbar is positioned below the buttons. At the bottom of the page are 'Refresh' and 'Clear' buttons. A sidebar on the left contains the text: 'For the administrator's to check system log file.'

**Enable Log:** Enabled or Disabled display system log information.

**System All:** List system all log information.

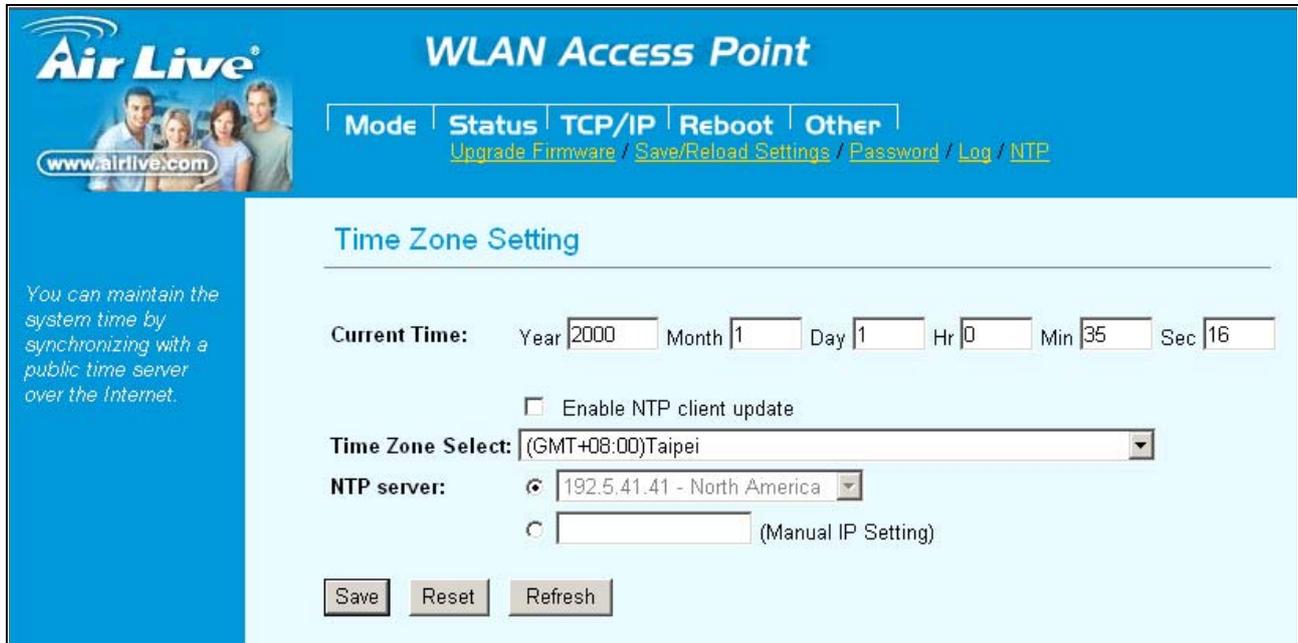
**Wireless Only List:** wireless log information only.

**Refresh:** Refresh log information.

**Clear:** Clear all information in window.

## 4.6 NTP Settings

This function can set system time from local computer or Internet.



The screenshot shows the configuration interface for an Air Live WLAN Access Point. The page title is "WLAN Access Point" and the logo "Air Live" is visible in the top left. A navigation menu includes "Mode", "Status", "TCP/IP", "Reboot", and "Other". Below the menu, there are links for "Upgrade Firmware", "Save/Reload Settings", "Password", "Log", and "NTP". The main content area is titled "Time Zone Setting". On the left side, there is a blue sidebar with the text: "You can maintain the system time by synchronizing with a public time server over the Internet." The "Current Time" section has input fields for Year (2000), Month (1), Day (1), Hr (0), Min (35), and Sec (16). There is a checkbox for "Enable NTP client update" which is currently unchecked. The "Time Zone Select" dropdown menu is set to "(GMT+08:00)Taipei". The "NTP server" section has a radio button selected for "192.5.41.41 - North America" and another radio button for "(Manual IP Setting)". At the bottom, there are three buttons: "Save", "Reset", and "Refresh".

**Current Time:** Setting system time

**Enable NTP client update:** Enable or Disable setting system from Internet NTP Server.

**Time Zone Select:** Select system time zone.

**NTP Server:** Select NTP Server by Server List or Manual Input.

# 5 System Recovery

WL-5460AP provides the system **recovery emergency code** function that can restore the machine after firmware crashed.

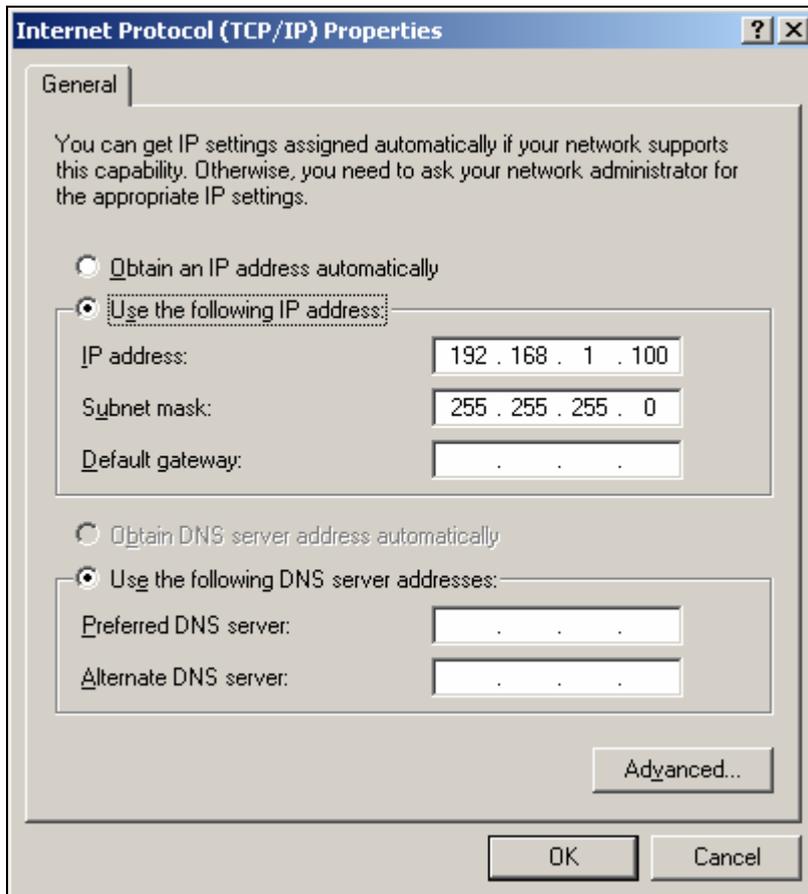
Please check if your WL-5460AP's serial number is **e5460AP70500001** or later. If it is, it has emergency code function. Otherwise, it doesn't. Once you make sure it has emergency code function. Please follow the steps below:

1. Unplug the power of WL-5460AP.
2. Hold the reset button while plugging the power. Do not release the reset button until the "**Status**" LED goes off.
3. Set your PC's IP address to 192.168.1.199. Connect your PC to the WL-5460AP.
4. Open your web browser, then type "**192.168.1.6**". You should see the emergency code page where you can upload your AirLive firmware again.

If your WL-5460AP's serial number is before **e5460AP70500001**, it does not have emergency code function. It needs to update bootloader first.

To upload the bootloader and firmware:

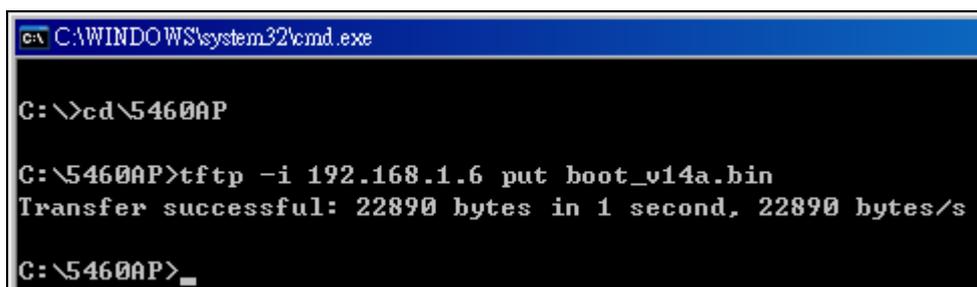
1. Copy the two files, "boot\_v14a.bin" and "5460APv2e9\_httpupgrade", to the location
1. "C:\5460AP":
2. Connect the Ethernet cable to the LAN 1 port of WL-5460AP (this step is mandatory).
3. Open the internet protocol setup dialog and enter IP addresses as shown below:



4. While pressing and holding the Reset button of WL-5460AP, connect WL-5460AP to its power supply. Keep holding the Reset button until the red light of the Status LED goes off.
5. Launch DOS Command Prompt and type the following commands:

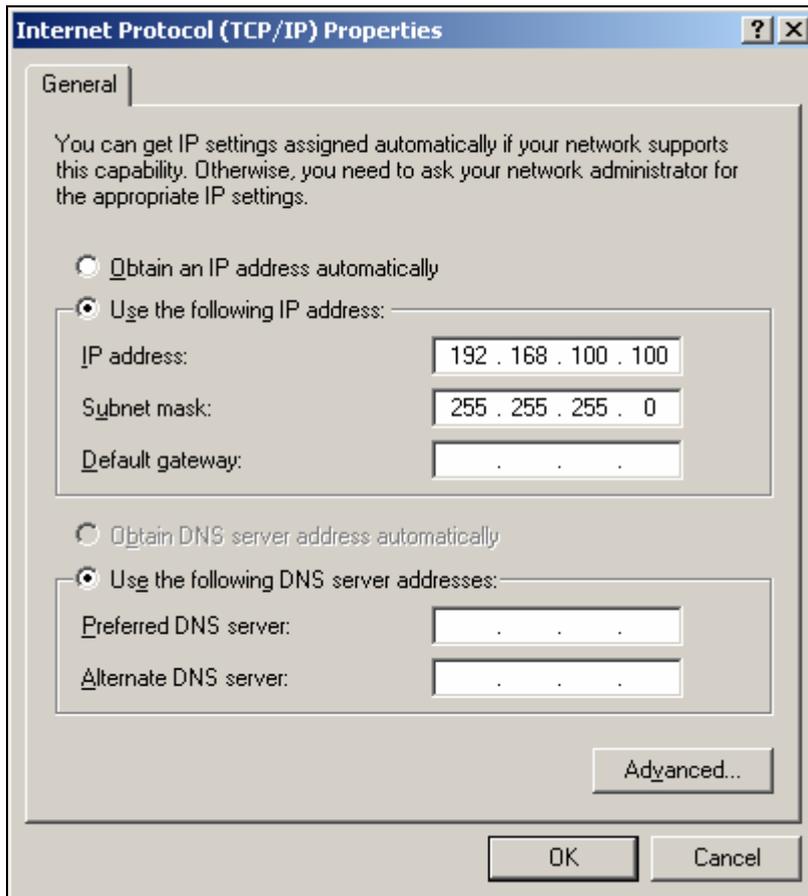
```
CD\5460AP
```

```
tftp -i 192.168.1.6 put boot_v14a.bin
```

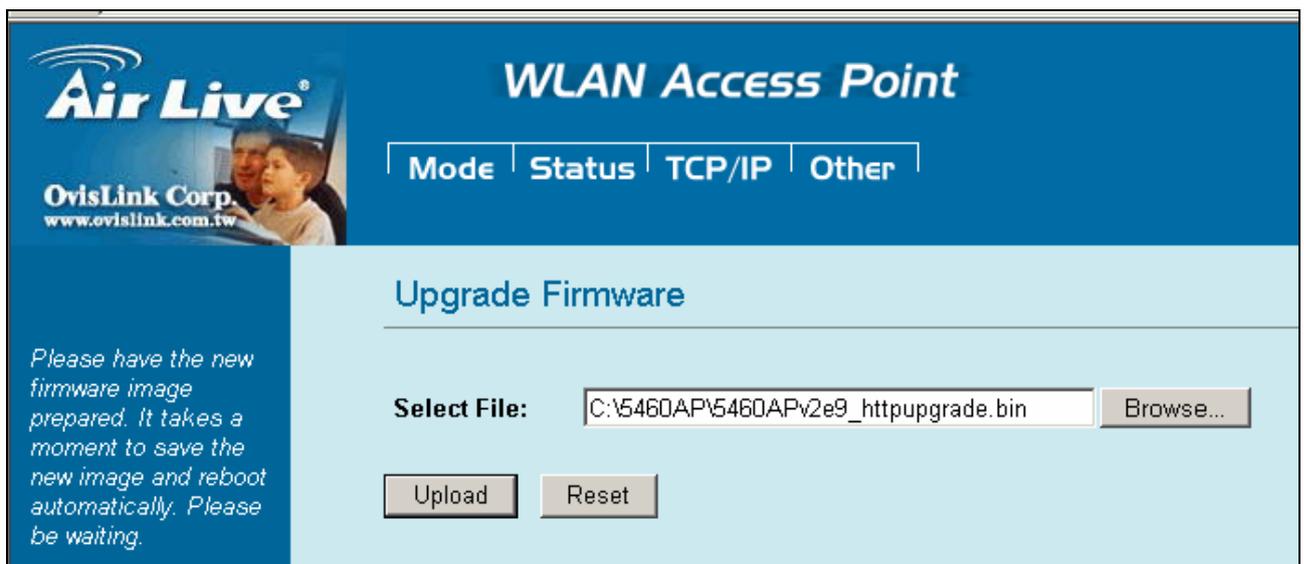


```
C:\WINDOWS\system32\cmd.exe
C:\>\>cd\5460AP
C:\5460AP>tftp -i 192.168.1.6 put boot_v14a.bin
Transfer successful: 22890 bytes in 1 second, 22890 bytes/s
C:\5460AP>_
```

6. WL-5460AP will then reboot itself. After it has completed rebooting, open the internet protocol setup dialog and enter IP addresses as illustrated below:



7. Open the WL-5460AP configuration menu and choose the category 'Other'. Then choose the feature "Firmware Upgrade". Click the Browse button to find and open the firmware file. Then click the Upload button to start upgrading the firmware.



8. Wait for about 30~40 seconds. After the WL-5460AP UI is re-launched, the upgrade of Boot Loader and Firmware are now complete for your WL-5460AP.

## 6. Specification

<b>Feature</b>	<ul style="list-style-type: none"> <li>• AP, Bridge, Client, Repeater functions</li> <li>• WISP Client Router mode</li> <li>• WISP + Universal Repeater Mode</li> <li>• Detachable Antenna, 2 LAN ports</li> <li>• 802.1x, WPA, WPA2 and Web Mgt.</li> <li>• TX power regulation in 4 levels</li> <li>• Watchdog function use PING</li> <li>• Wireless Client Isolation (e8 firmware)</li> <li>• ACK Timeout Adjustment</li> <li>• DHCP Relay function</li> <li>• 802.11g Protection</li> </ul>
<b>Hardware</b>	<ul style="list-style-type: none"> <li>• 2 x 10/100Mbps LAN Port</li> <li>• 2MB Flash, 16MB SDRAM</li> <li>• Reversed SMA Antenna Port</li> <li>• Power, LAN, WLAN LED indicators</li> </ul>
<b>Antenna</b>	<ul style="list-style-type: none"> <li>• 2 dBi detachable Dipole Antenna</li> <li>• Reversed SMA Connector</li> </ul>
<b>Frequency Range</b>	<ul style="list-style-type: none"> <li>• USA (FCC) 11 Channels: 2.412GHz~2.462GHz</li> <li>• Europe (ETSI) 13 Channels : 2.412GHz~2.472GHz</li> <li>• Japan (TELEC) 14 Channels :2.412GHz~2.483GHz</li> </ul>
<b>Modulation Technique</b>	<ul style="list-style-type: none"> <li>• 11g Orthogonal Frequency Division Multiplexing (64QAM, 16QAM, QPSK, BPSK)</li> <li>• 11b Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)</li> <li>• Data Rate: 54, 48, 36, 24, 18,11, 5.5, 2, 1 Mbps</li> </ul>
<b>Output Power</b>	<ul style="list-style-type: none"> <li>• 18dBm</li> <li>• Adjustable in 4 levels</li> </ul>
<b>WISP Mode</b>	<ul style="list-style-type: none"> <li>• DHCP, PPTP, L2TP, PPPoE ISP Authentication Support</li> <li>• Wireless Client function as WAN</li> <li>• WISP mode is not the same router mode</li> <li>• To configure the WISP mode, you PC must be connected to the LAN port</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• 64/128-bit WEP</li> <li>• WPA/WPA2-PSK support</li> </ul>

	<ul style="list-style-type: none"> <li>• 802.1x Radius Support</li> <li>• WPA Enterprise support in AP/WDS mode</li> </ul>
<b>Configuration</b>	<ul style="list-style-type: none"> <li>• Web Management</li> <li>• WDS (Bridge, Client, Repeater) mode</li> <li>• Hide ESSID</li> <li>• 802.1x</li> <li>• MAC Access Control</li> <li>• MAC Access Table</li> <li>• Wireless Client Isolation (e8 firmware)</li> <li>• SSID, Channel, RTS Threshold, Frag Threshold</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• Operating temperature: 0~60°C</li> <li>• Operating humidity (non-condensing): 20~80%</li> <li>• Storage temperature: -20~65°C</li> <li>• Storage humidity: 95% Max</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• DC12V</li> </ul>
<b>EMI</b>	<ul style="list-style-type: none"> <li>• FCC, CE</li> </ul>
<b>Product Weight (g)</b>	<ul style="list-style-type: none"> <li>• 180 g</li> </ul>
<b>Product Size ( L x W x H (mm) )</b>	<ul style="list-style-type: none"> <li>• 135 x 100 x 26mm</li> </ul>