# 802.11g Wireless USB Adapter

# WL-U356L

# User Manual

Version: 1.0

Date: November   2007

## Copyright

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

1.  Reorient or relocate the receiving antenna.
2.  Increase the separation between the equipment and receiver.
3.  Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4.  Consult the dealer or an experienced radio 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 the 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.

## Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency

exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

## R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8,2000.

## Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

## WEEE regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

## Revision

User's Manual for PLANET 802.11g Wireless USB Adapter

Model: WL-U356L

Rev: 1.0 (November. 2007)

Part No. EM-WLU356L

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# Chapter 1 Introduction

Complying with the IEEE802.11b/g standard, the WL-U356L provides simple, reliable, and high-speed wireless connectivity for the desktop users. The WL-U356L is capable of offering up to 54Mbps at 2.4GHz frequency bands.

Support of WPA and WPA2 (Wi-Fi Protected Access) with AES encryption keeps your wireless communications away from unauthorized access and ensures secure data transfer. Backward compatible with 802.11b standard, the WL-U356L is easier to join existing network and protect your original investments. The WL-U356L also takes advantage of flexibility and convenience of PCI interface.

## 1.1 Features

- IEEE 802.11b/g standard compliant
- Provides up to 54Mbps data rate at 2.4GHz
- Supports 64/128-Bit WEP, WPA, WAP2, WPA-PSK, and WPA2-PSK functions for high level of security
- Support of Ad-Hoc / Infrastructure mode
- Support of most popular operating systems including Windows 98SE/ME/2000/XP/Vista
- Wireless connectivity without the hassles and cost of running cables
- Compliant with USB 1.1/2.0 standard
- Seamless integration with existing LAN through any IEEE 802.1b/g complaint Access Point.

## 1.2 Specification

| Interface | USB 1.1 / 2.0, Type-A |
|---|---|
| Standards Conformance | Compliant with IEEE 802.11b/g |
| Data Transfer Rate | 11b : 1 / 2 / 5.5 / 11Mbps (auto sensing) |
| | 11g : 6 / 9 / 12 / 18 / 24 / 48 / 54Mbps (auto sensing) |
| Operating Mode | Infrastructure Mode, Ad-Hoc Mode |
| Security | WEP 64/128 Bit, WPA, WPA2 , WPA-PSK , WPA2-PSK |
| Modulation | 802.11b: CCK (11 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps); |
| | 802.11g: OFDM |
| Channels | 2.412~2.462GHz(FCC, Canada)/11 Channels |
| | 2.412~2.4835GHz(Japan, TELEC)/14 Channels |
| | 2.412~2.472GHz(Euro ETSI)/13 Channels |
| Media Access Protocol | CSMA / CA |

| Transmit Power | 15dBm typically @ 802.11b |
| --- | --- |
| | 13dBm typically @ 802.11g |
| Sensitivity | 54Mbps: Typical -68dBm @ 10% PER |
| | 11Mbps: Typical -83dBm @ 8% PER |
| LED Indicators | LNK |
| Operating System | Windows 98SE / Me / 2000 / XP / Vista |
| **Environmental & Mechanical Characteristics** | |
| Dimensions | 77 x 26 x 12 mm |
| Unit Weight | 10g |
| Certifications | FCC ,CE |
| Operating Temp | 0 – 40 degree C |
| Storage Temp | -10 – 70 degree C |
| Operating Humidity | 10% to 85%, Non-Condensing |

## 1.3 Package Contents

Before installation, please check the items of your package. The package should include the following items:

  1 x WL-U356L

  1 x Driver and User's manual CD

  1 x Quick Installation Guide

  1 x USB cable

***If any of the above items is missing, contact your supplier for support.***

## 1.4 Minimum System Requirements

Before installation, please check the following requirements with your equipment.

    Pentium Based (above) IBM-compatible PC system with one vacancy USB port

    CD-ROM drive

    Windows 98SE/Me/2000/XP/Vista Operating System

    At least 10MBytes of free disk space for utility and driver installation

## 1.5 Installation Considerations

Beware of the walls and ceilings. Each wall or ceiling can reduce your wireless cover range form 3-90 feet. Properly position your Access Points, Residential Gateways, and computers so

that the number of walls or ceilings residing between Access Points and clients is minimized.
Building materials make a difference – A solid metal door or aluminum studs may have a
negative effect on signal coverage range. Try to properly position Access Points and computers
with wireless adapters so that there would be less obstacles existing between them.
Keep your wireless LAN devices away from microwaves, cordless phones and child incubators.
It is likely that the latter will cause interferences to the operation of your wireless LAN devices.

## 1.6 LED Status of PLANET WL-U356L

The status LED indicators of the USB wireless adapter are described in the following.
● Link ON (Green): indicates a valid connection
● Link Flashing: indicates the WL-U356L is transmitting or receiving data.

# Chapter 2 Installation Procedure

## 2.1 Configuration Utility & Driver Installation in XP OS

The following installation operates under Window XP. The procedure also applies to Windows 98SE / Me / 2000

> **Note 1:** If you had ever installed the other Wireless Cards before, please uninstall the existed drivers and utilities first.
>
> **Note 2:** Please install the configuration utility before insert WL-U356L into the USB port of the computer.

1. Insert the bundled CD into the CD-ROM driver. The Wizard should run automatically to display the menu screen.
2. Select suitable utility link according to your system. In this example, Windows 98/ME/2000/XP utility is selected.



3. Follow the Install Shield Wizard steps, and click "Finish" when done.
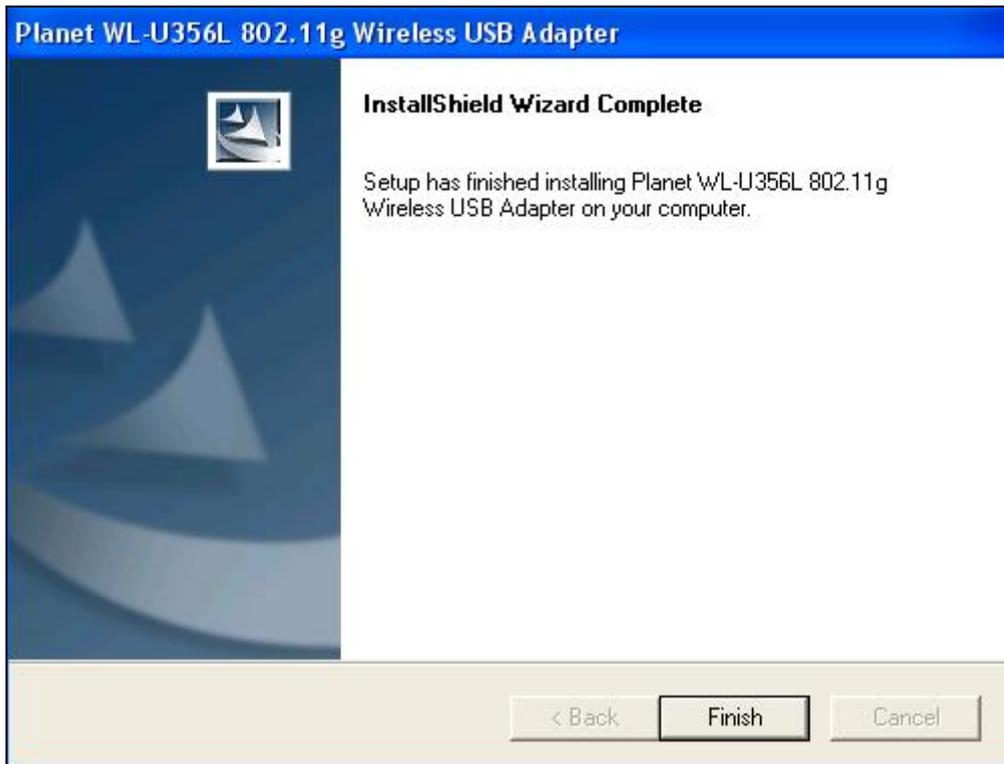
4. Insert WL-U356L into a vacant USB port of your PC. Windows will detect this device automatically. When the "Found New Hardware Wizard" dialog box appears, select "No, not this time", and click "Next" to continue.

5. Choose the "Install the software automatically" and click "Next".



6. Click "Finish" to complete the driver installation

## 2.2 Configuration Utility & Driver Installation in Vista OS

1. Insert the bundled CD into the CD-ROM drive to launch the auto run program. Once completed, a menu screen will appear.
2. Click the "Windows Vista Utility" hyperlink to initiate the installation procedure.
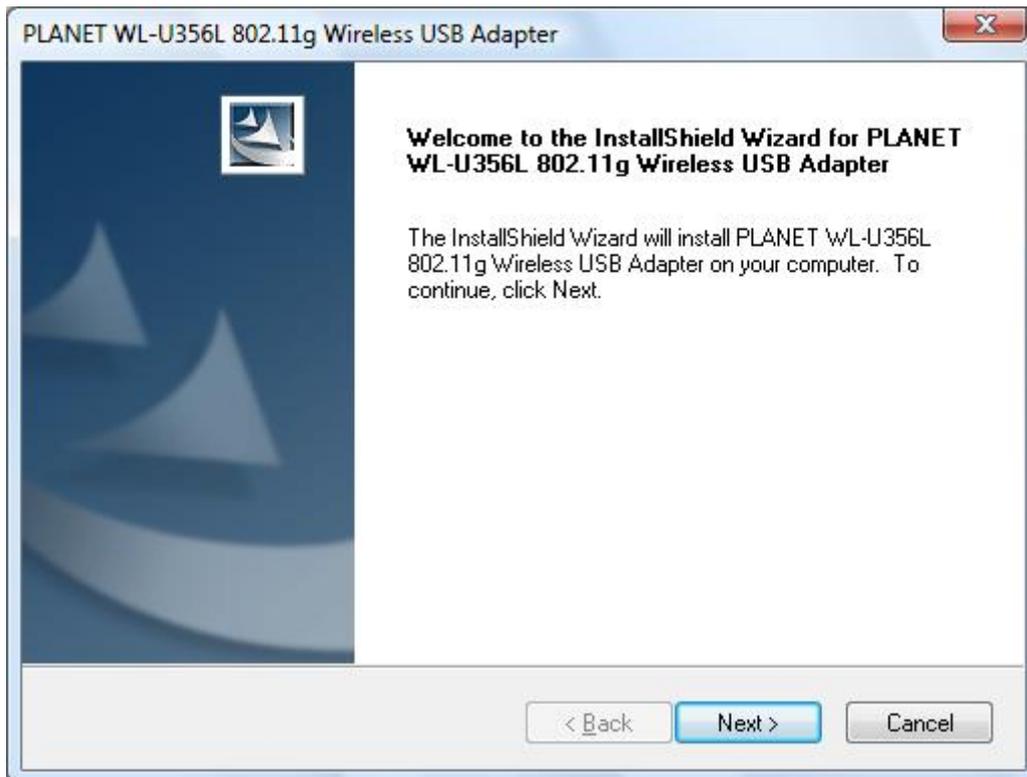


3. Follow the Install Shield Wizard steps, and click "Finish" when done
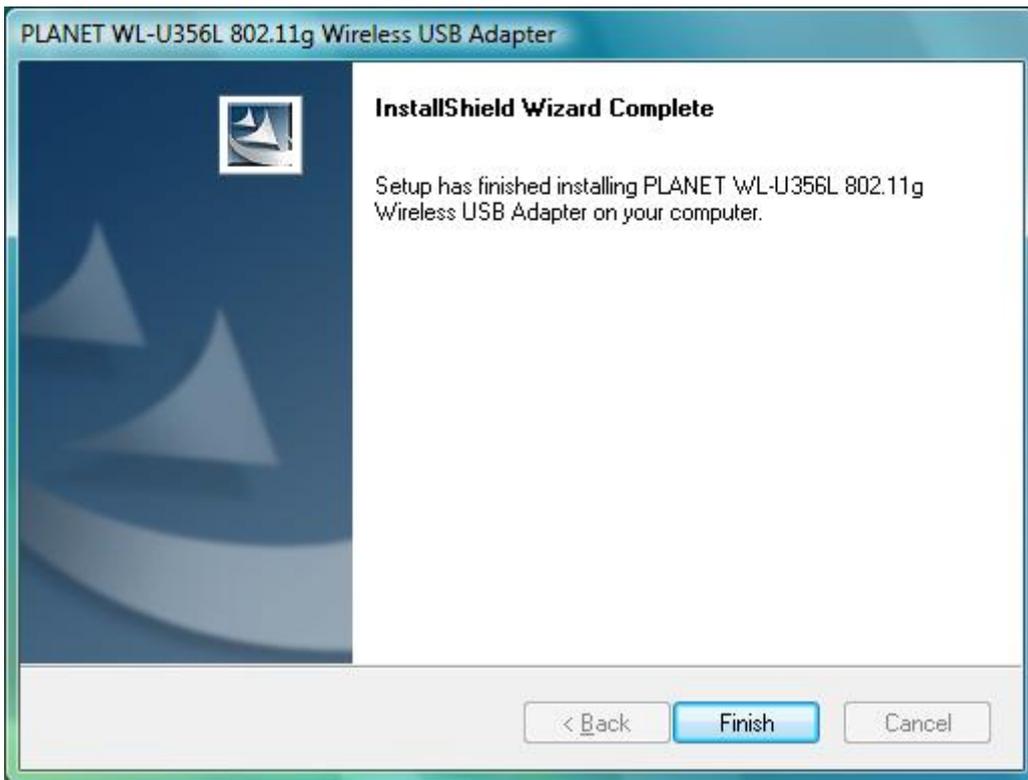
4. Insert WL-U356L into a vacant USB port of your PC. Windows will detect this device automatically. When the "Found New Hardware Wizard" dialog box appears, please click "Cancel".



5. Open the Computer Management in Device Manager to update WL-U356L driver.
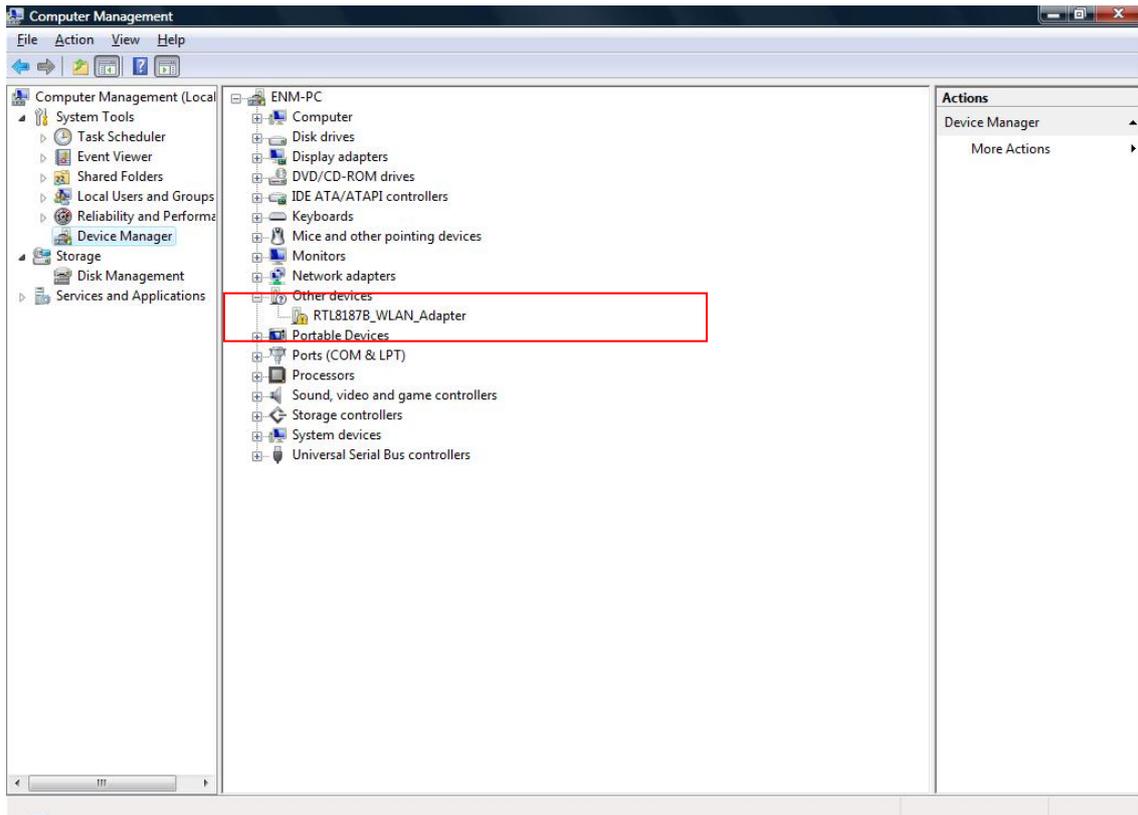
6. Choose the "Browse my computer for driver software (advanced)", tick the box of "include this location in the search:". Click "Browse" to locate the suitable driver (32- or 64-Bit) in CD-ROM. Then click "OK" to continue.
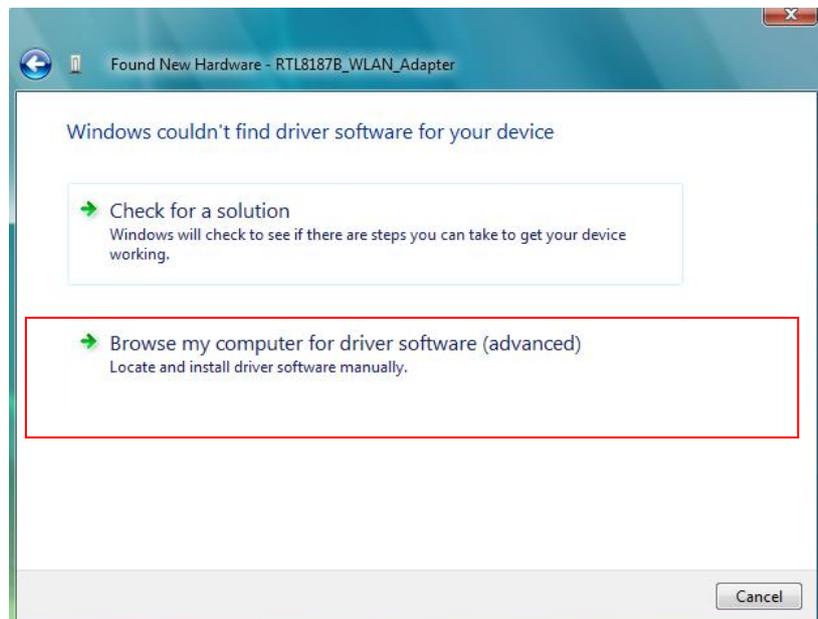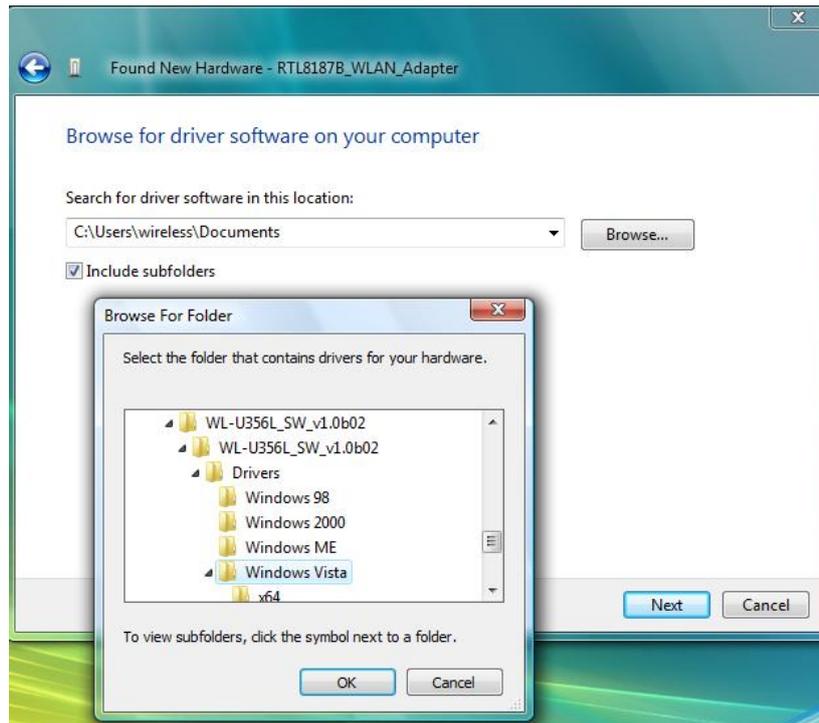
7. Choose the "Install this driver software anyway".



8. Click "Close" to complete the driver installation

The software for this device has been successfully installed

Windows has finished installing the driver software for this device:

Planet WL-U356L 802.11g Wireless USB Adapter
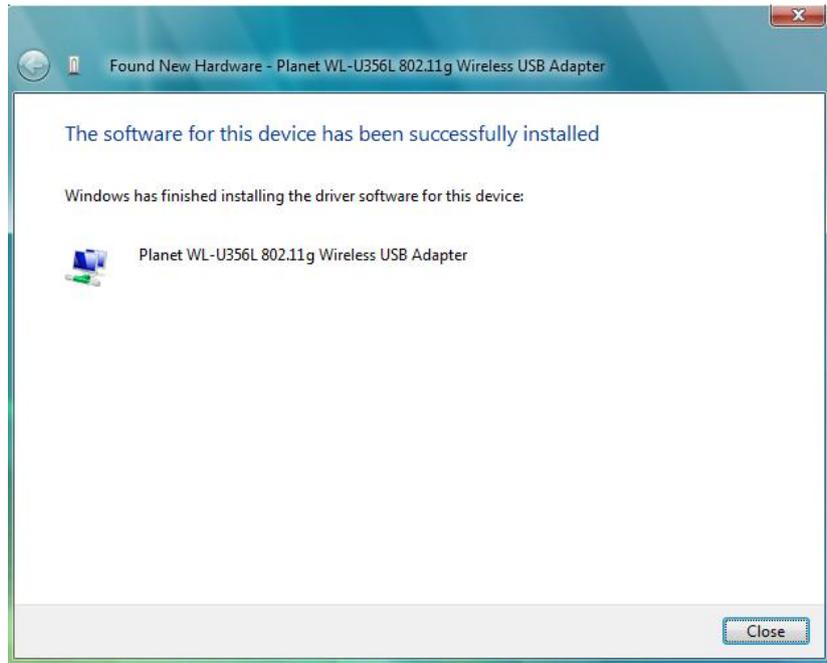
# Chapter 3 Configuration Utility

The Configuration Utility is a powerful application that helps you configure the WL-U356L and monitor the link status and statistics during the communication process .

When the WL-U356L is installed, the configuration utility will be displayed automatically. This card will auto connect to wireless device which has better signal strength and no wireless security setting
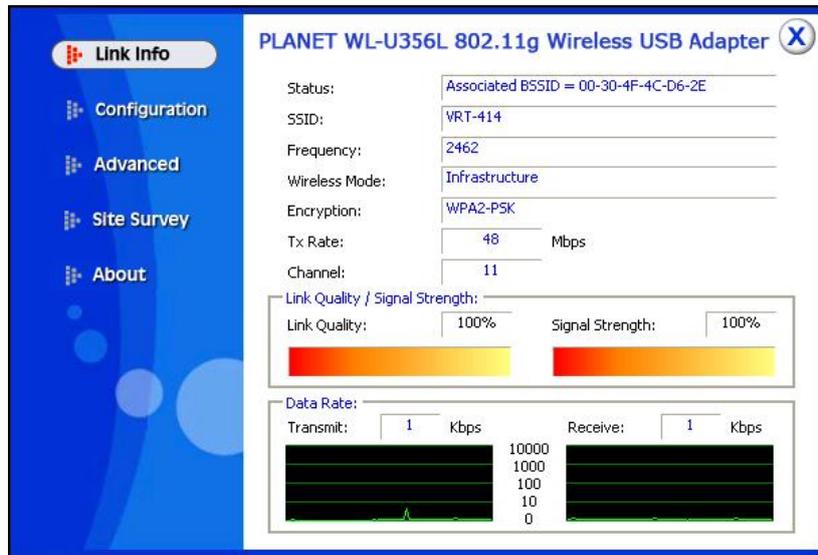


If the Configuration Utility does not appear, you can double-click the icon on your system tray to start it. Another way to start the Configuration Utility is to click on Start > Programs > 802.11 Wireless LAN > WL-U356L.

## 3.1 Link Info

The **Link Info** displays signal strength and link information, Internet Protocol (TCP/IP).
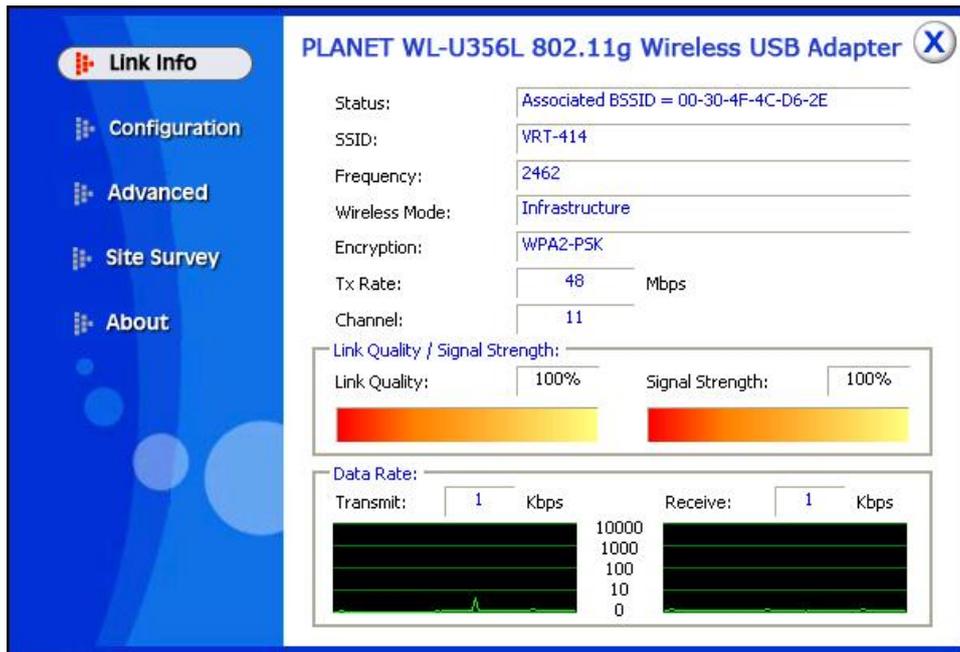
This screen contains current link information of WL-U356L.

**Status:** Shows the BSSID associated with, which can be used to identify the wireless network.

**SSID:** Shows current SSID, which must be the same for the wireless client and AP in order to establish the communication.

**Frequency:** Shows the current frequency used for wireless network.

**Wireless Mode:** Shows the current wireless mode used for wireless communication.

**Encryption:** Shows the current encryption mode used for wireless network.

**Tx Rate:** Shows the current data rate used for transmitting.

**Channel:** Shows the current channel for communication.

**Link Quality:** Shows the link quality of WL-U356L with the Access Point when operating in Infrastructure mode.

**Signal Strength:** Shows the wireless signal strength of the connection between the WL-U356L and the Access Point.

**Data Rate:** Shows the statistics of data transfer, and the calculation is based on the number of packets transmitted and received.

# 3.2 Configuration
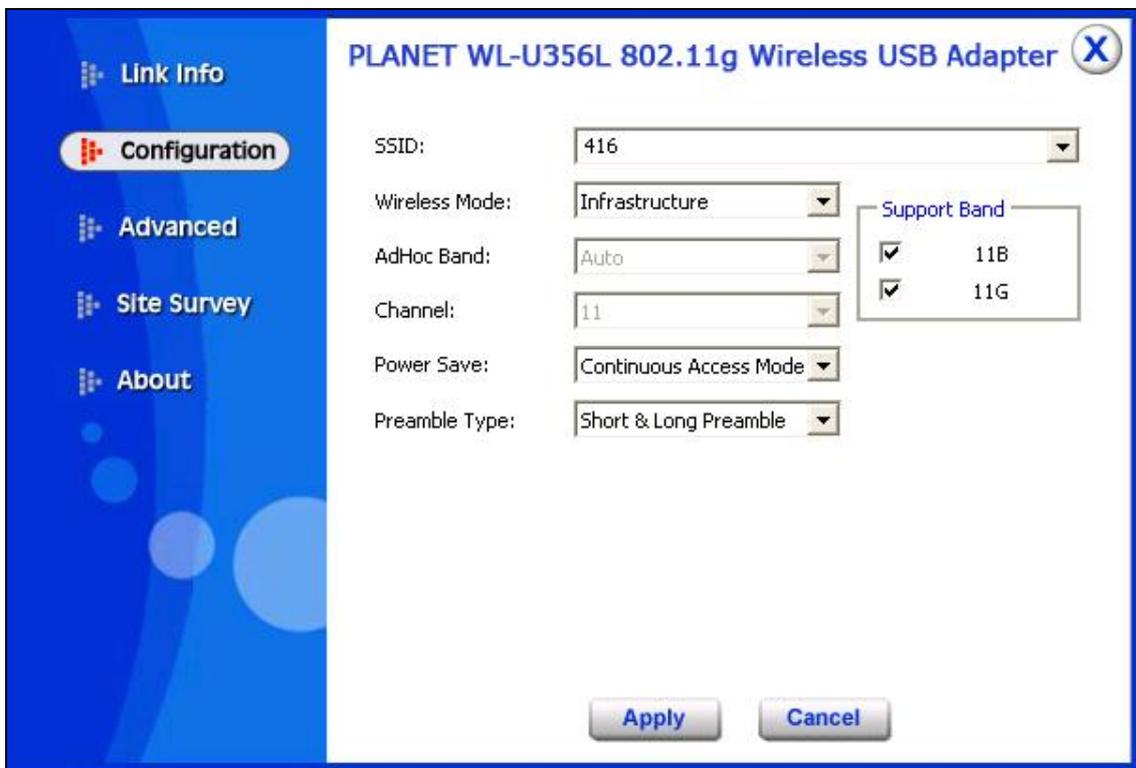


In this screen, you can configure the wireless settings of WL-U356L. After configuration, please press "Apply" to save settings or "Cancel" to set again.

◆ **SSID:** The SSID must be identical for each clients and nodes in the wireless network.

◆ **Wireless Mode:** Click pull-down button and select the work mode below.

  ➢ **Ad-Hoc:** This mode indicates the peer-to-peer operation. All communication is done from client to client without the use of an Access Point.

  ➢ **Infrastructure:** This operation mode requires the presence of an Access Point. All communication is done via the Access Point.

◆ **Ad-Hoc Band:** There are three options available for selection

  ➢ **11B:** Allows user to set the 802.11b standard wireless network.

  ➢ **11G:** Allows user to set the 802.11g standard wireless network.

◆ **Channel:**　 Shows the number of the radio channel used for the networking.

◆ **Power Mode:** Shows Power Management modes. There are two optional selections for this mode.

  ➢ **Continuous Access Mode:** WL-U356L will always set in active mode.

  ➢ **Maximum Power Save:** WL-U356L will enter power saving mode when it is idle.

  ➢ **Power Save:** WL-U356L consumes the moderate level of power.

◆ **Preamble:** There is two options can be selected: Short & Long Preamble, Long Preamble. Preamble is a sequence of bits transmitted at 1Mbps that allows the PHY circuitry to reach

steady-state demodulation and synchronization of bit clock and frame start. Two different preambles and headers are defined: the mandatory supported Long Preamble and header, which interoperate with the 1 Mbit/s and 2 Mbit/s DSSS specification (as described in IEEE 802.11), and an optional Short Preamble and header (as described in IEEE 802.11b). At the receiver, the Preamble and header are processed to aid in demodulation and delivery of the PSDU. The Short Preamble and header may be used to minimize overhead and, thus, maximize the network data throughput. However, the Short Preamble is supported only from the IEEE 802.11b (High-Rate) standard and not from the original IEEE 802.11. That means that stations using Short-Preamble cannot communicate with stations implementing the original version of the protocol.

**Support Band:** The supported bands of WL-U356L are 11B, 11G. With all options selected, WL-U356L can keep the highest flexibility when making connection to AP. If you fix the WLAN band for both AP and WL-U356L, it can skip the initial negotiation time.

## 3.3 Advanced



Additional security can be achieved by using any of the following encryption methods: WEP (Wired Equivalent Privacy), WPA and WPA2 ( Wi-Fi Protected Access ), and WPA-PSK and WPA2-PSK ( Pre Shared Key ).

**When "WEP" is selected in "Encryption" field**, WEP encryption is activated. Please enter the appropriate parameters to these fields.

◆ **Auth. Mode:**

- ➢ **Auto:** With this setting, stations can communicate with the Access Point either with or without data encryption. It will detect the AP that it connected is using which Authentication mode and use the same mode to communicate.
- ➢ **Open System:** With this setting, the station in the WLAN can receives and transmits data from Access Point (null authentication).
- ➢ **Shared Authentication:** With this setting, allows communication only with other devices with identical WEP settings.
- ◆ **WEP Key options:**
  - ➢ **Default Key:** There are 4 keys available for the WEP function. Please select one of them for WEP to operate.
  - ➢ **Network Key:** You can define the WEP (Wired Equivalent Privacy) Key values by yourself.
  - ➢ **Key Length –** Please select which WEP key mode you want to use. There are three modes, each mode has two kind of key length and that is decide on the **Key Format** you selected. 64bit (5ASCII / 10HEX.), 128bit (13ASCII / 26HEX).
- ◆ **Key Format –** You can select WEP key format to **HEX** (Hexadecimal code, 0-9, A-F) or **ASCII** (American Standard Code for Information Interchange, 0-9, a-z, A-Z).

**When " WPA and WPA2 " is selected in "Encryption" field,** please click "Configuration" button for advanced settings.



WPA uses 802.1x and Extensible Authentication Protocol (EAP) as the basis of its authentication mechanism. Thus your computer needs to install a certification for the RADIUS server first. Please consult with your network administrator for getting the certification and the appropriate parameters of the above screen.

**When " WPA-PSK and WPA2-PSK " is selected in "Encryption" field**, please click "Configuration" button and key in the identical passphrase as configured in Access Point.
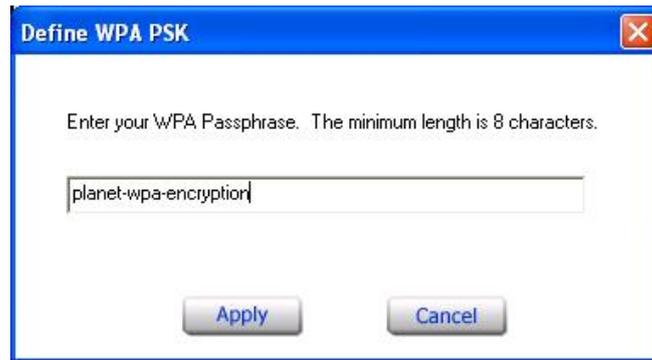
WPA-PSK and WPA2-PSK is a special mode of WPA for home users without an enterprise authentication server and provides the same strong encryption protection.

## 3.4 Site Survey
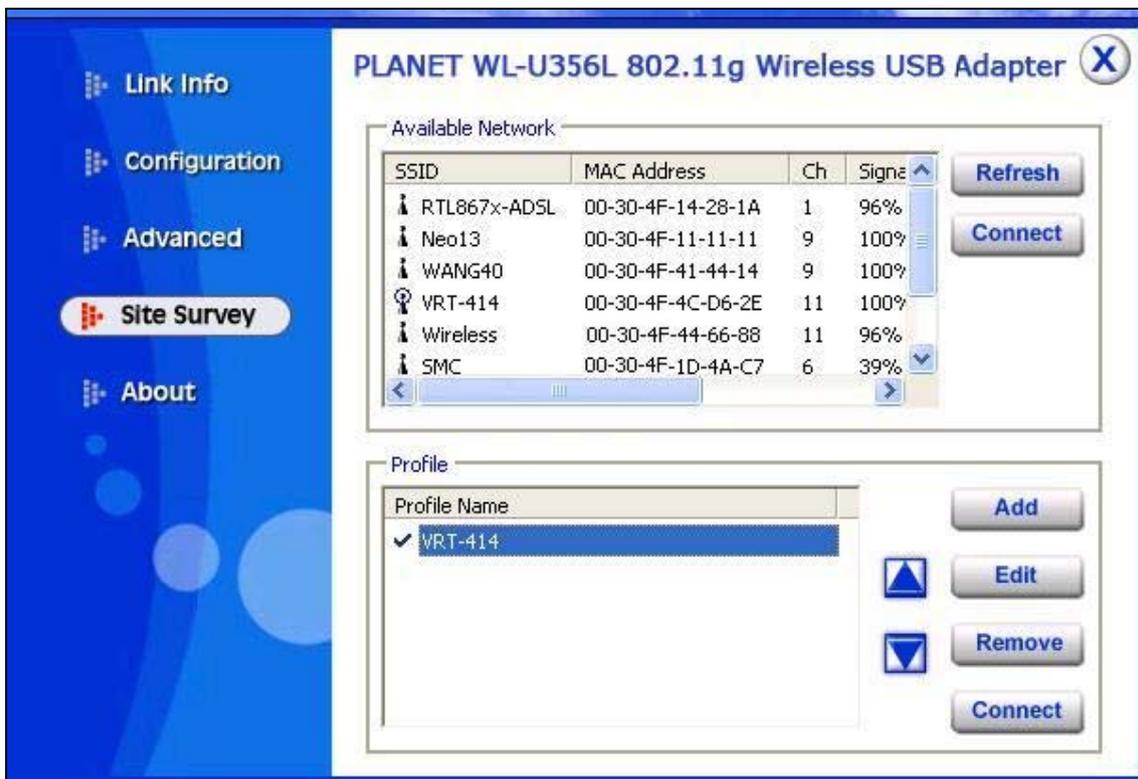


This screen shows the APs or Adapters which available for WL-U356L to connect. If you configure the SSID of WL-U356L as "Any", it will show all available APs and Adapters at the same time.

Click " **Refresh** " to collect the BSSID and Channel information of all the wireless devices around you.

If you wish to connect to any device on the "**Available Network**" list, select the device on the list and click "**Connect**", then WL-U356L will connect to the selected device and create a profile for the selected device automatically.

You can configure profile with those buttons:

- ➢ **Add:** Add a new profile.
- ➢ **Remove:** Delete the profile you selected.
- ➢ **Properties:** Modify the profile you selected.

After press **Add** or **Properties**, the dialog box will appears for configuring profile. You can refer to above to know how to configure the setting for your need.

## 3.5 About

It shows the current *Driver*, *Firmware* and *Utility* version.

# Chapter 4 Troubleshooting

1.  **The PLANET WL-U356L does not work properly.**

    a. Reinsert the PLANET WL-U356L into your PC's .

    b. Right click on My Computer and select Properties. Select the device manager and click on the Network Adapter. You will find the Adapter if it is installed successfully. If you see the yellow exclamation mark, the resources are conflicting. You will see the status of the Adapter. If there is a yellow question mark, please check the following:

    > Make sure that your PC has a free IRQ (Interrupt Request, a hardware interrupt on a PC.)

    > Make sure that you have inserted the right adapter and installed the proper driver.

    c. If the Adapter does not function after attempting the above steps, remove the adapter and do the following:

    > Uninstall the driver software from your PC.

    > Restart your PC and repeat the hardware and software installation as specified in this User Guide.

2.  **I cannot communicate with the other computers linked via Ethernet in the Infrastructure configuration.**

    a. Make sure that the PC to which the Adapter is associated is powered on.

    b. Make sure that your Adapter is configured on the same channel and with the same security options as with the other computers in the Infrastructure configuration.

3.  **What should I do when the computer with the Adapter installed is unable to connect to the wireless network and/or the Internet?**

    a. Check that the LED indicators for the broadband modem are indicating normal activity. If not, there may be a problem with the broadband connection.

    b. Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.

    c. Check that the IP address, subnet mask, gateway, and DNS settings are correctly entered for the network.

    d. In Infrastructure mode, make sure the same Service Set Identifier (SSID) is specified on the settings for the wireless clients and access points.

    e. In Ad-Hoc mode, both wireless clients will need to have the same SSID. Please note that it might be necessary to set up one client to establish a BSS (Basic Service Set) and wait briefly before setting up other clients. This prevents several clients from trying to establish a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple clients associated to it.

    f. Check that the Network Connection for the wireless client is configured properly.

g. If Security is enabled, make sure that the correct encryption keys are entered on both the Adapter and the access point.