802.11g Wireless USB Dongle

USER MANUAL

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802.11g Wireless USB Dongle **USER MANUAL**	DOCUMENT	
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1. Introduction

1.1 Product Feature

- Compliance with IEEE ***802.11g*** and ***802.11b*** standards
- Highly efficient design mechanism to provide unbeatable performance
- Achieving data rate up to 54Mbps for 802.11g and 11Mps for 802.11b with wide range coverage
- Strong network security with ***WEP*** and ***WPA*** support
- Auto-switch between the two standards, IEEE 802.11b and 802.11g
- Driver/Utility support most commonly used operating systems including Windows 2000/XP.
- Pen size which is easy to carry provides users the most mobility and flexibility.
- Support USB 2.0 and USB 1.1 at the same time, especially for ***USB 2.0*** the data rate reaches ***480MBytes***.

1.2 System Requirement

- Windows 2000 and XP operating systems
- PC with Pentium III 600MHz system or above is recommended
- Equipped with at least one PC USB socket or PC USB adapter, USB 1.1 at least.
- One CD-ROM drive

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2. Getting Start

2.1 LED Indicators

The Power LED will be ON when the unit is powered up.
The Link LED will be Blinking indicates a WLAN connection.

2.2 Install the 802.11g Wireless USB Dongle

1. Before insert USB Dongle into the PC USB of your computer, please install the Utility Program first. Make sure that the 802.11g Wireless USB Dongle is **NOT** inserted into the USB slot.

   NOTE: all the snapped images of installation mentioned in this manual are based on Windows XP. For other windows operating system, all the procedures are the same but the screens are not the exactly same.

2. Turn on the computer. Insert the CD into the CD-ROM Drive. Please select "USB Dongle" and then click the **"Install"**.

InstallShield Wizard will automatically start. Please click **"Next"** to continue.

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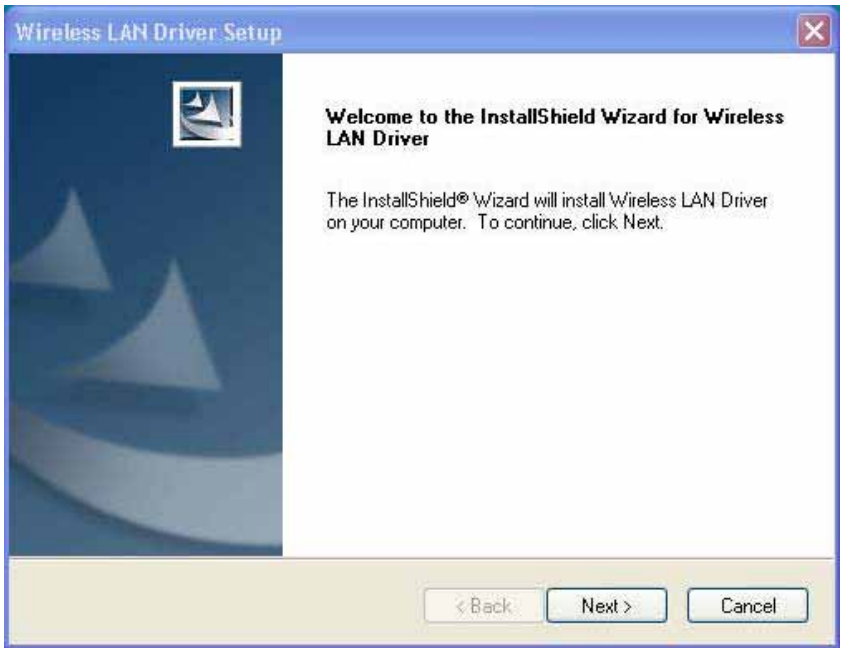
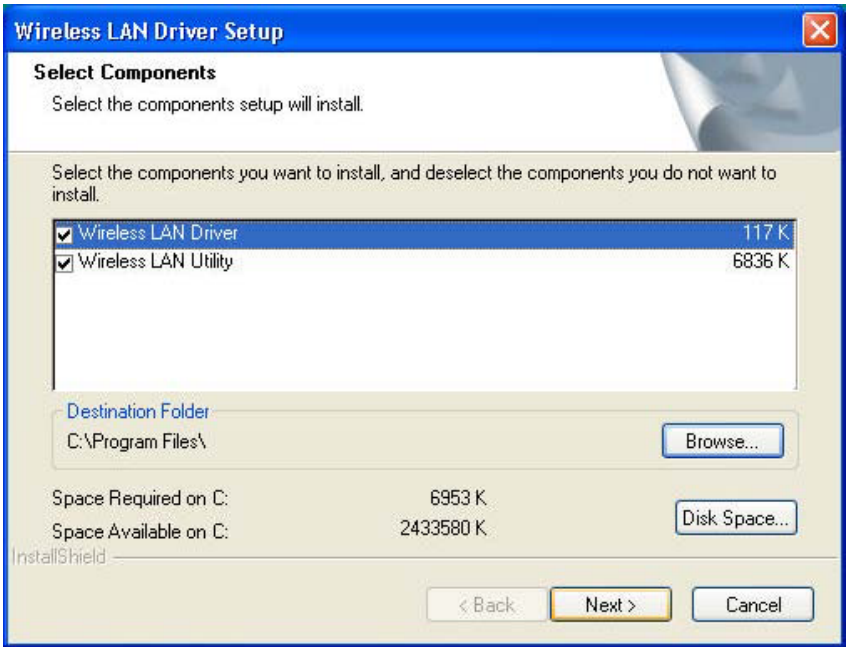


3. Setup WLAN Driver and Utility. Please click **"Next "** to continue.



If user wants to change the installation folder, press "**Brower**" to change the directory or press "**Next**" to continue.

4. Click "**Finish**" to complete installation.

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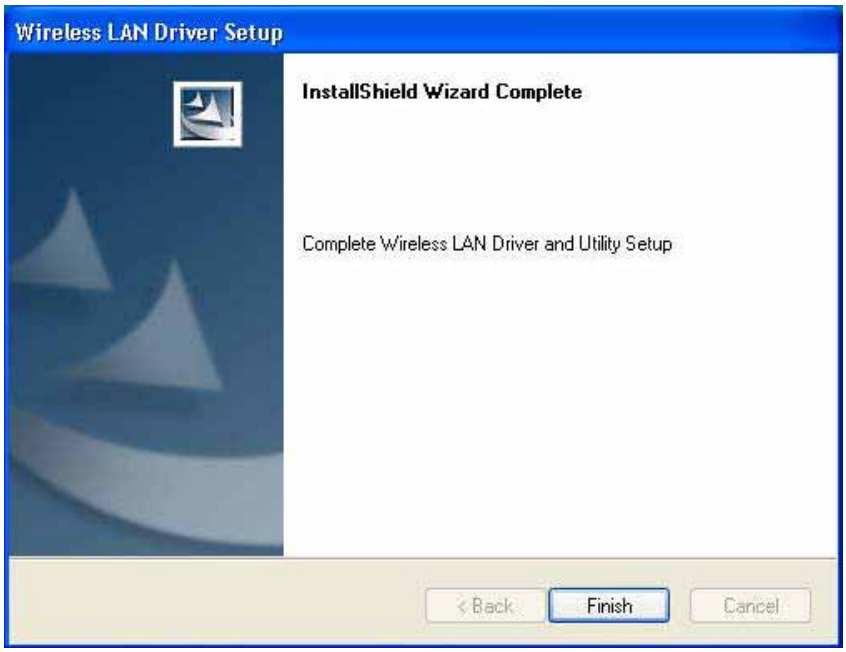
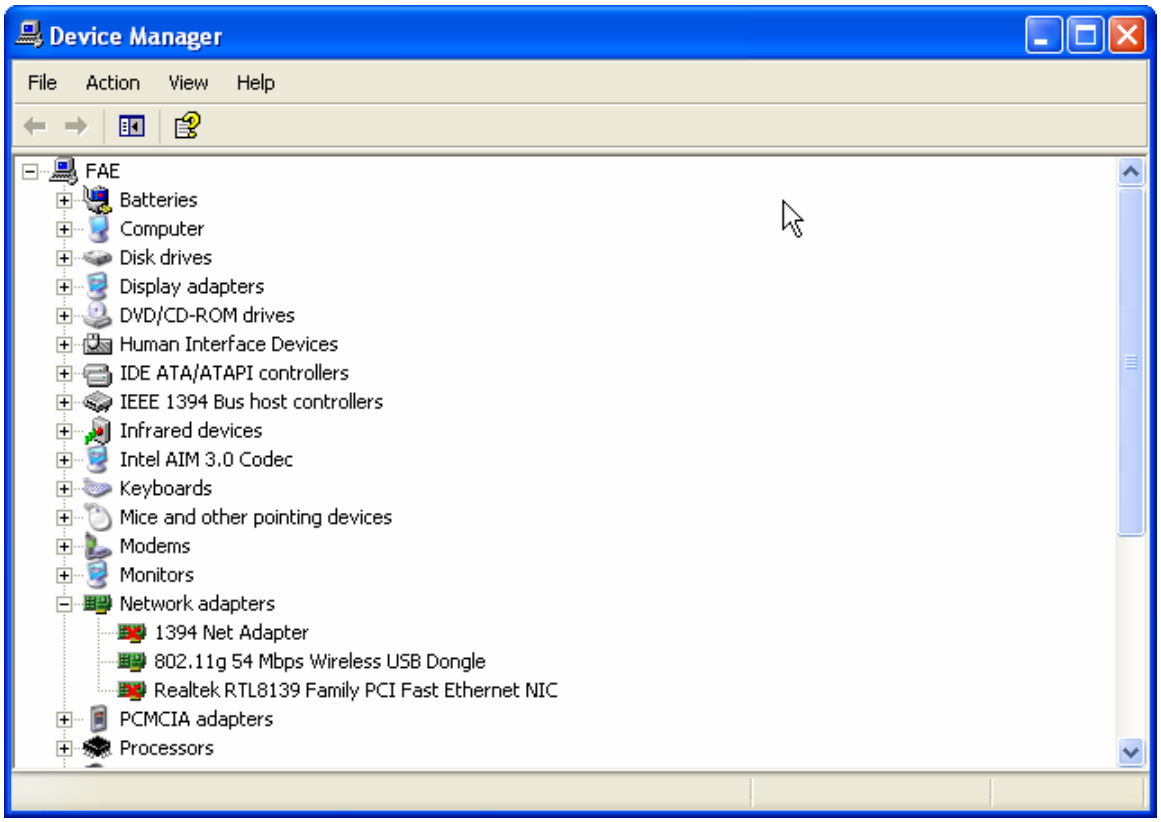


5. After installing Utility, insert the 802.11g Wireless USB Dongle into the USB receptacle. Window 2000/XP will detect the device automatically.

6. To make sure if the installation is successful, please check it through the device management.



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7. Once the installation is successful, a utility program icon will show in the taskbar. To lunch the utility, just double click the icon.

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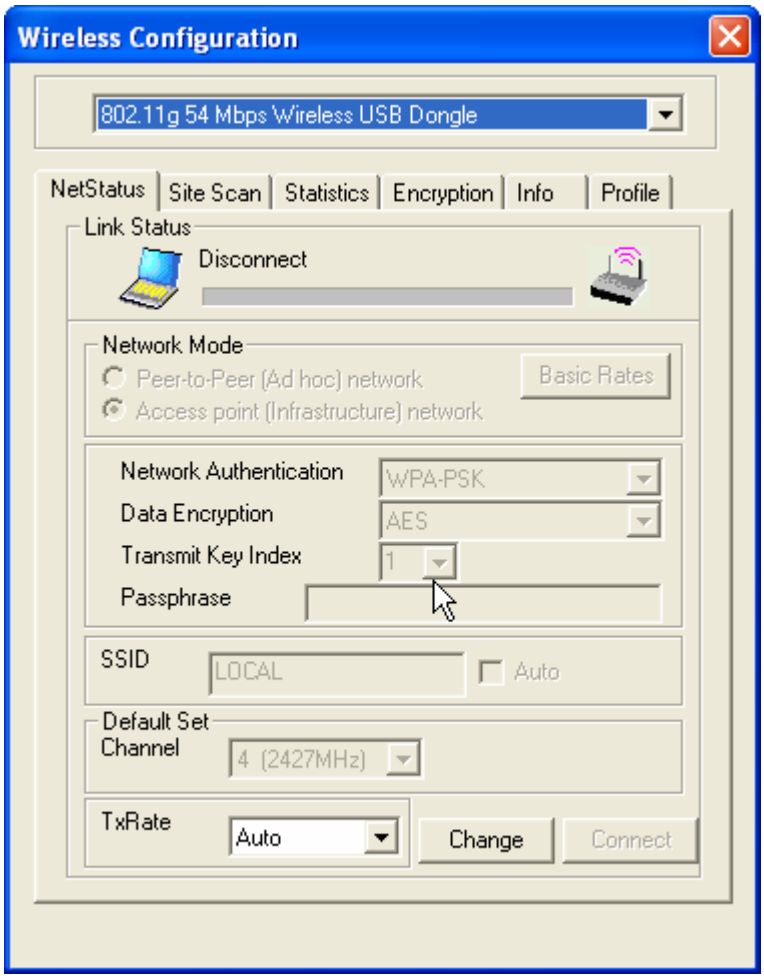
3. Configuration

3.1 Net Status

The default page is as below after launch the Utility program.



Link Status: Shows the network linking status.

Network Mode: Shows the current wireless mode used for wireless communication, including Peer to Peer and Access point network. User can also change Transmit/Receive Rate via press **"Basic Rates"** button, it's not recommended to change the settings.

Network Authentication: Shows the current encryption mode used for wireless networking.

- **Data encryption:** Open System, Share-Key System, Auto Switch and WPA-PSK
- **Transmit Key Index:** The channel responding to the access point or router.
- **Passphrase:** Value of the encryption key.

SSID: Shows the SSID associated, which must be same as the AP in order to establish the communication.

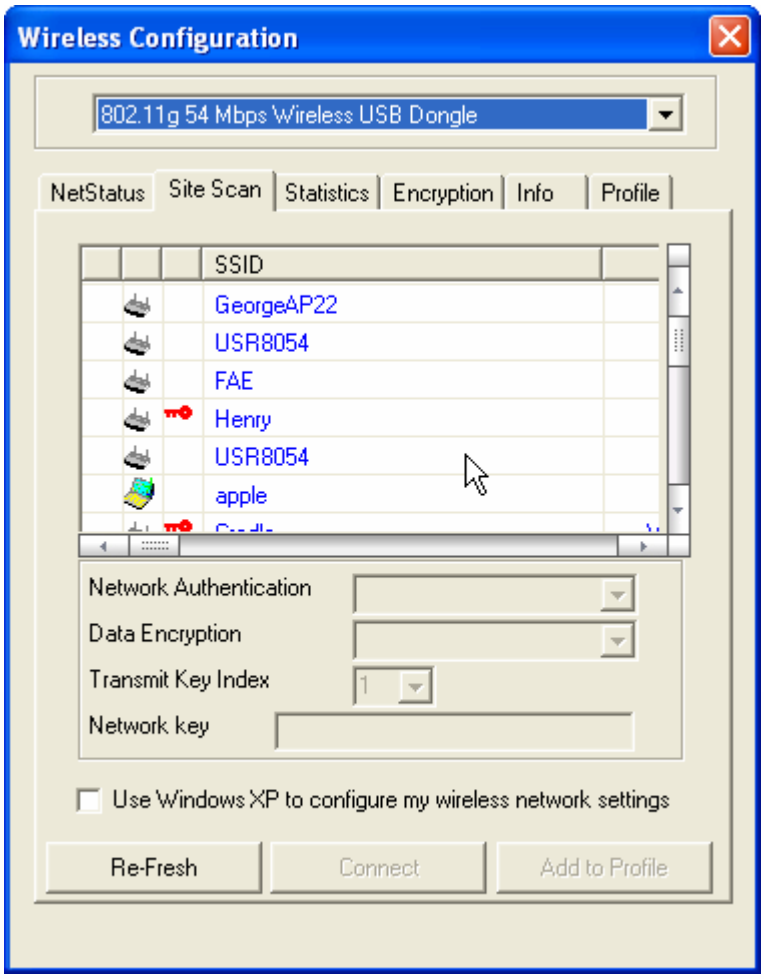
Default Set Channel: Shows the current associated channel.

TxRate: Shows the current transmitting data rate. Default set in auto. It can be changed by selecting available data rate. It's not recommended to change the settings.

3.2 Site Scan

This page allows to enable the site scan function to scan for the available wireless network (Wireless clients and Access Points) and establish the wireless communication with one.

Users can choose one of the networking devices first, key in properly information required by the device (it might be an access point, wireless router or another wireless lan card), press "connect" to start connection.



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SSID: Service Set Identifier, which is a unique name shared among all clients and nodes in a wireless network. The SSID must be identical for each clients and nodes in the wireless network.

Network Authentication: 4 options are available.

- **Open system:** the sender and receiver do not share secret key for communication. Instead, each party generates its own key-pairs and asks the other party to accept it. The key is regenerated when the connection is established every time.
- **Shared-Key system:** the sender and receiver share the common key for data communication and the key are used for extended the time length.
- **Auto Switch:** depends on the communication to establish, and automatically use the proper authentication mode.
- **WPA-PSK:** It's a new encryption technology, but not all the access point or router supports this function.

Data Encryption: While using WPA-PSK, there are two encryption way to do enable, TKIP and AES.

Transmit Key Index: select one of the 4 keys to use.

Network Key: enter values to these fields, either in HEX or ASCII formats.

Use Window XP to configure my wireless network settings: Check the box to use the Window XP "Zero Configuration" program to configure the settings, instead of this utility. Use the default utility with the box unchecked.

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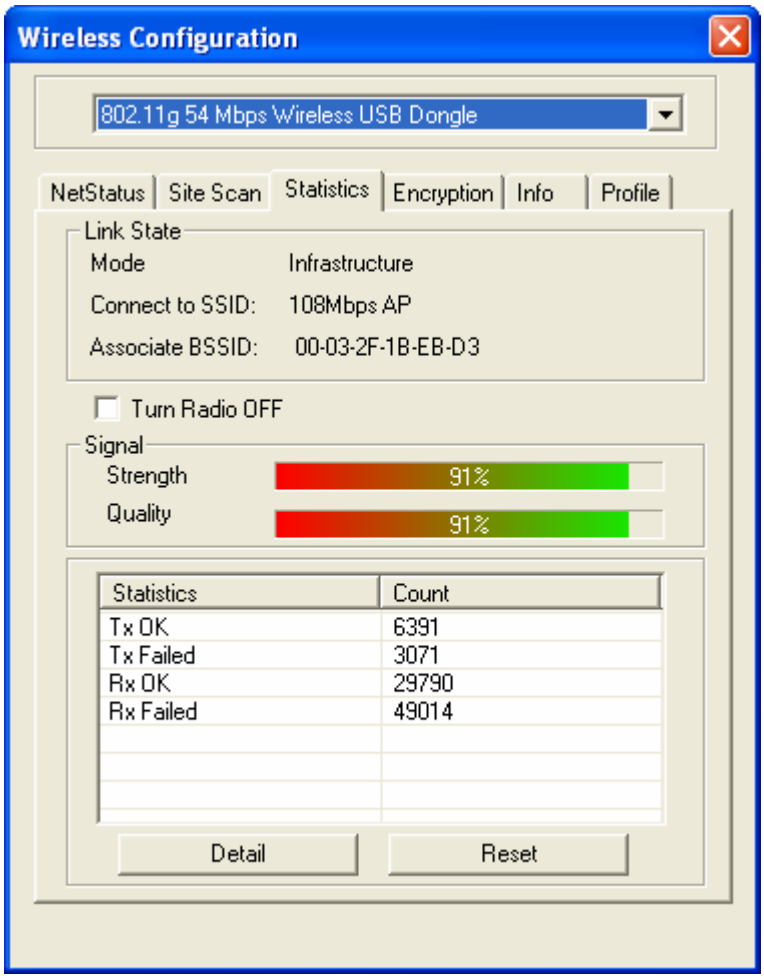
3.3 Statistics

This is the page shows the linking information, signal strength and quality. Further more, user can see transmit and receive statistics. If check the **Turn Radio Off**, the radio interface will be turned off.



Link Quality: Shows the link quality of the 802.11g wireless LAN USB Dongle with the Access Point when operating under Infrastructure mode.

Signal Strength: Shows the wireless signal strength of the connection between the 802.11g Wireless LAN USB Dongle with the Access Point.

Statistics & Count: Shows the statistics of data transfer.

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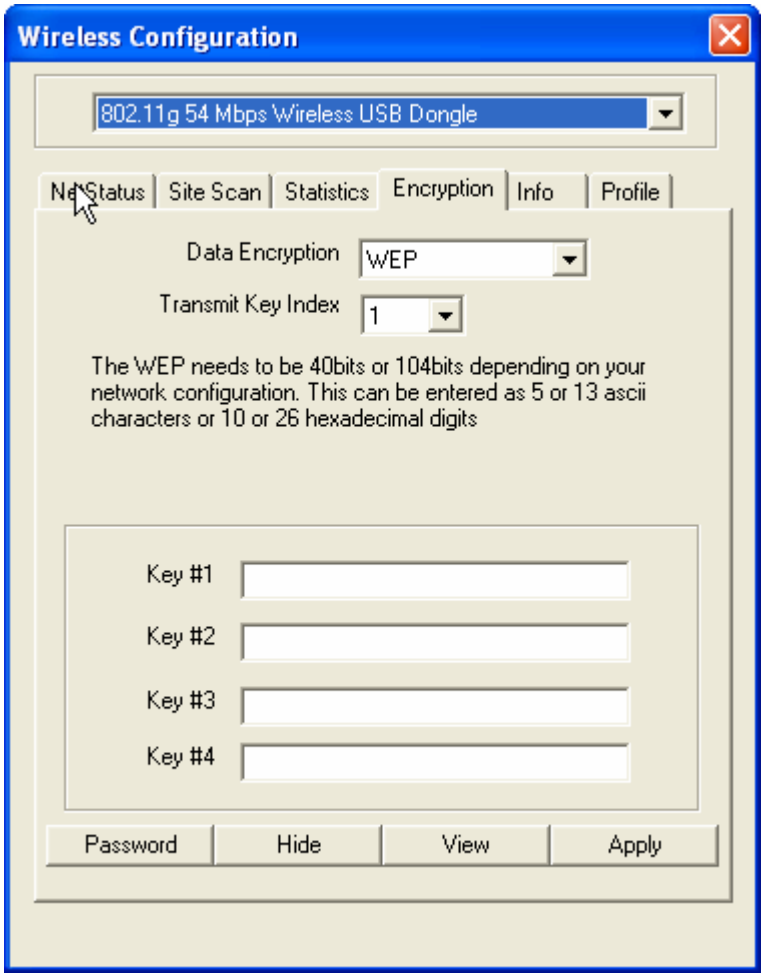
3.4 Encryption

This is the page where configures the encryption settings of 802.11g 54Mbps Wireless USB Dongle. Users can see the original encryption value with clicking on the **"View"** button, **"Password"** to change the value, **"Hide"** to make the password invisible, and **"Apply"** to make the new settings change.



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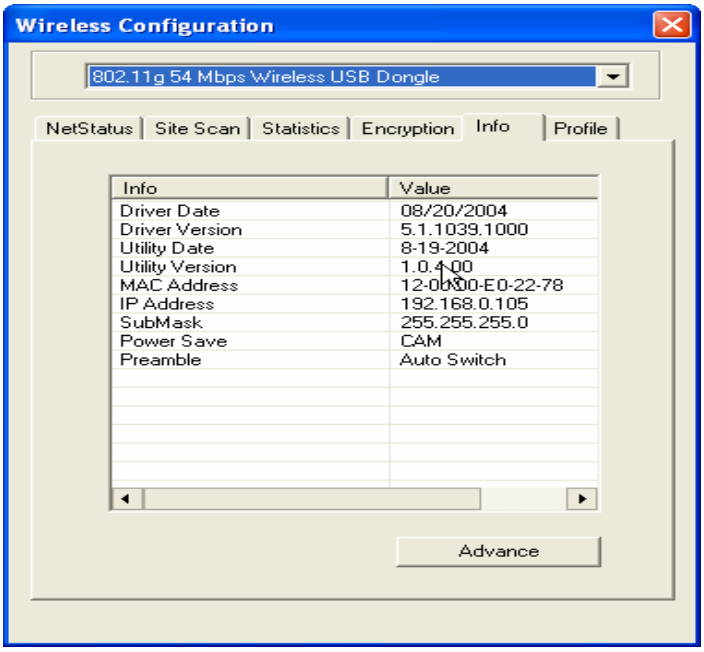
3.5 Info

This page displays some information about 802.11g 54Mbps Wireless USB Dongle utility, which includes **Driver Date**, **Driver Version**, **Utility Date**, **Utility Version**, **MAC Address**, **IP Address**, **SubMask**, **Power Save** and **Preamble**.



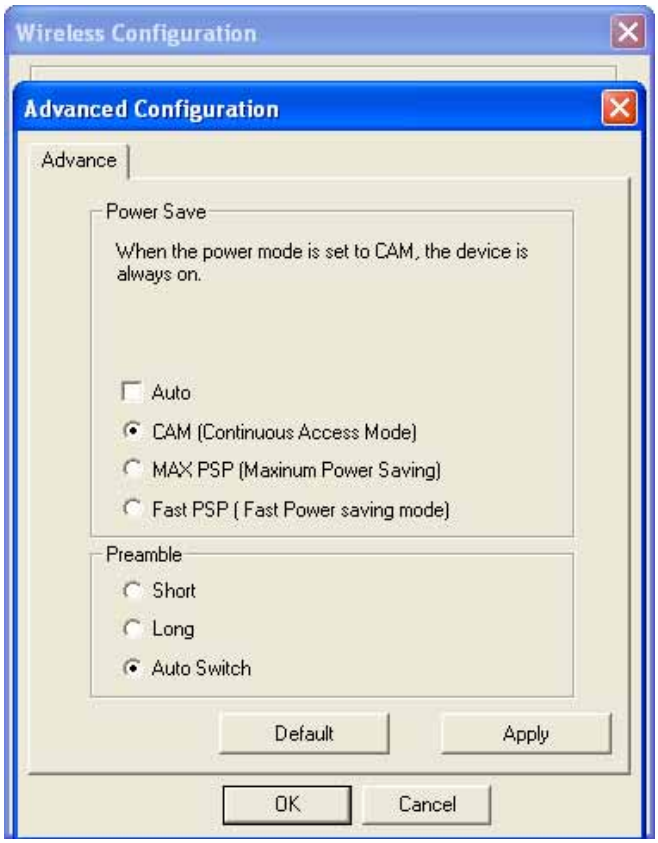
Advance: Users can enter the Advance property page to configure the settings of Power Save and Preamble.

Power Save: There are 3 modes for power save, including CAM (Continuous Access Mode), MAX PSP (Maximum Power Saving) and Fast PSP (Fast Power Saving). The default setting is CAM (Continuous Access Mode).

Preamble: There are 3 options for Preamble, including Long, Short and Auto Switch, and default setting is Auto Switch.

- **Short Preamble:** Transmit data with Short Preamble, with enable this function, the transmit speed will lower than Long preamble format, but not so easily impacted by interference as Long Preamble.
- **Long Preamble:** Transmit data with Long Preamble, with enable this function, the transmit speed will higher than Short Preamble format, but easily impacted by interference.
- **Auto Switch:** Driver will choose the properly preamble format depends on the outside interference automatically. The default setting for Preamble is Auto Switch, and

recommended not been changed.



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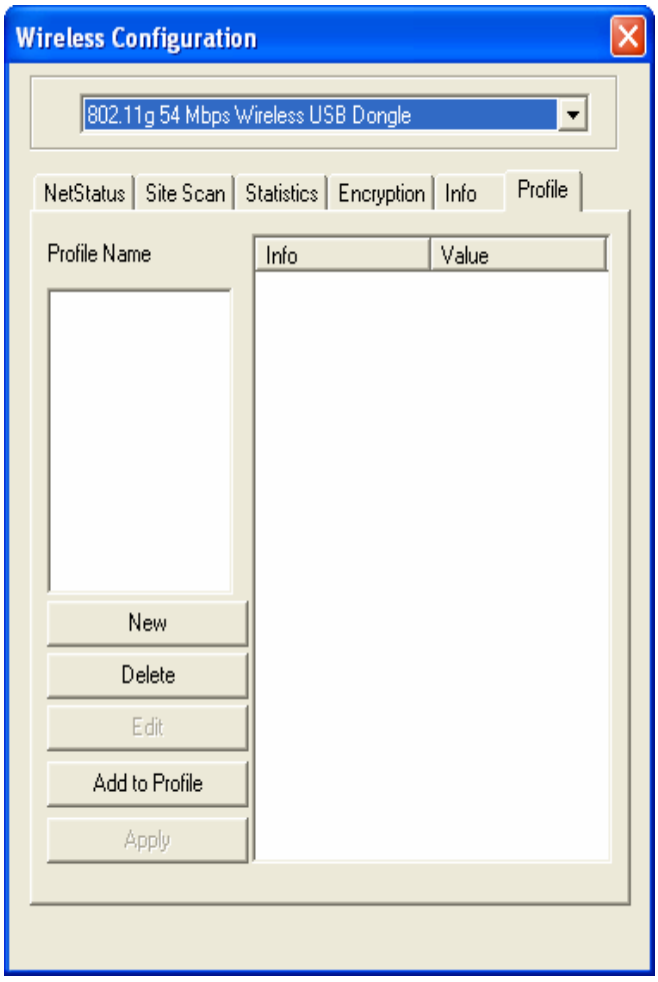
3.6 Profile

This page is for creating, editing, and deleting any available networks to the profile. Once add new profile to the table, users can access the networking devices without redundant effort, Wireless USB Dongle will link to the device based on the profile automatically.



The profile information is the same as the previous settings. Users can configure the Profile Name, SSID, Network Mode, and other items as the following picture.

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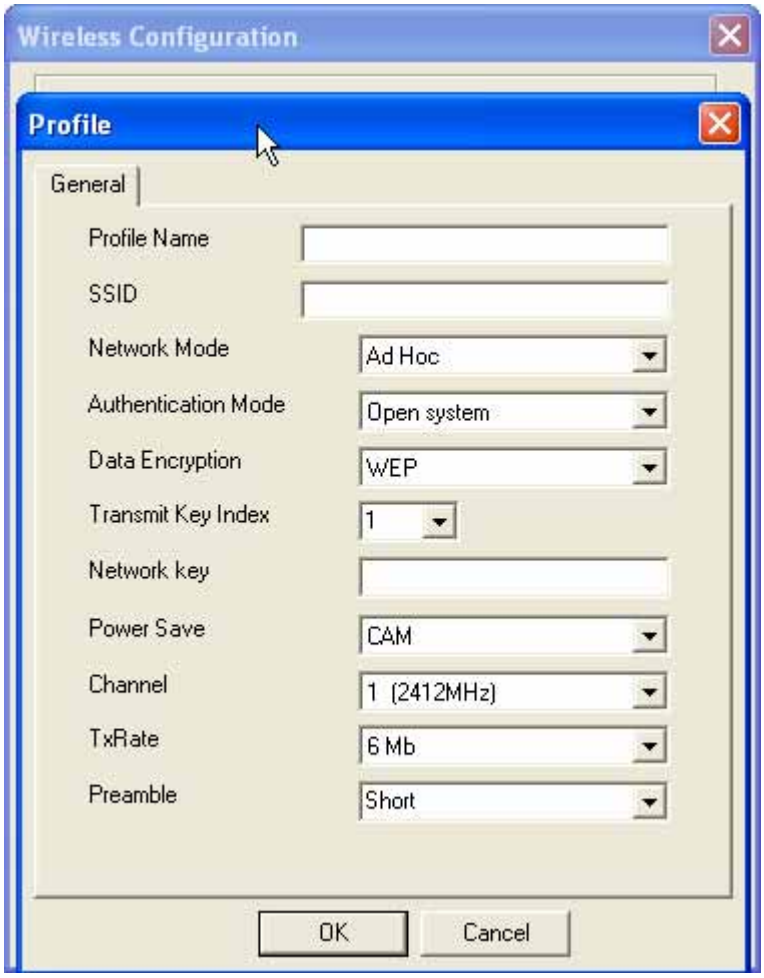

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4. Glossary

Access Point: An internetworking device that seamlessly connects wired and wireless networks.

Ad-Hoc: An independent wireless LAN network formed by a group of computers, each with a network adapter.

AP Client: One of the additional AP operating modes offered by 54Mbps Access Point, which allows the Access Point to act as an Ethernet-to-Wireless Bridge, thus a LAN or a single computer station can join a wireless ESS network through it.

ASCII: American Standard Code for Information Interchange, ASCII, is one of the two formats that you can use for entering the values for WEP key. It represents English letters as numbers from 0 to 127.

Authentication Type: Indication of an authentication algorithm which can be supported by the Access Point:

1. Open System: Open System authentication is the simplest of the available authentication algorithms. Essentially it is a null authentication algorithm. Any station that requests authentication with this algorithm may become authenticated if 802.11 Authentication Type at the recipient station is set to Open System authentication.
2. Shared Key: Shared Key authentication supports authentication of stations as either a member of those who knows a shared secret key or a member of those who does not.

Backbone: The core infrastructure of a network, which transports information from one central location to another where the information is unloaded into a local system.

Bandwidth: The transmission capacity of a device, which is calculated by how much data the device can transmit in a fixed amount of time expressed in bits per second (bps).

Beacon: A beacon is a packet broadcast by the Access Point to keep the network synchronized. Included in a beacon are information such as wireless LAN service area, the AP address, the Broadcast destination addresses, time stamp, Delivery Traffic Indicator Maps, and the Traffic Indicator Message (TIM).

Bit: A binary digit, which is either -0 or -1 for value, is the smallest unit for data.

Bridge: An internetworking function that incorporates the lowest 2 layers of the OSI network protocol model.

Browser: An application program that enables one to read the content and interact in the World Wide Web or Intranet.

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BSS: BSS stands for “Basic Service Set”. It is an Access Point and all the LAN PCs that associated with it.

Channel: The bandwidth which wireless Radio operates is divided into several segments, which we call them “Channels”. AP and the client stations that it associated work in one of the channels.

CSMA/CA: In local area networking, this is the CSMA technique that combines slotted time -division multiplexing with carrier sense multiple access/collision detection (CSMA/CD) to avoid having collisions occur a second time. This works best if the time allocated is short compared to packet length and if the number of situations is small.

CSMA/CD: Carrier Sense Multiple Access/Collision Detection, which is a LAN access method used in Ethernet. When a device wants to gain access to the network, it checks to see if the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and wait a random amount of time before retrying.

DHCP: Dynamic Host Configuration Protocol, which is a protocol that lets network administrators manage and allocate Internet Protocol (IP) addresses in a network. Every computer has to have an IP address in order to communicate with each other in a TCP/IP based infrastructure network. Without DHCP, each computer must be entered in manually the IP address. DHCP enables the network administrators to assign the IP from a central location and each computer receives an IP address upon plugged with the Ethernet cable everywhere on the network.

DSSS: Direct Sequence Spread Spectrum. DSSS generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

Dynamic IP Address: An IP address that is assigned automatically to a client station in a TCP/IP network by a DHCP server.

Encryption: A security method that uses a specific algorithm to alter the data transmitted, thus prevent others from knowing the information transmitted.

ESS: ESS stands for “Extended Service Set”. More than one BSS is configured

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to become Extended Service Set. LAN mobile users can roam between different BSSs in an ESS.

ESSID: The unique identifier that identifies the ESS. In infrastructure association, the stations use the same ESSID as AP's to get connected.

Ethernet: A popular local area data communications network, originally developed by Xerox Corp., that accepts transmission from computers and terminals. Ethernet operates on a 10/100 Mbps base transmission rate, using a shielded coaxial cable or over shielded twisted pair telephone wire.

Fragmentation: When transmitting a packet over a network medium, sometimes the packet is broken into several segments, if the size of packet exceeds that allowed by the network medium.

Fragmentation Threshold: The Fragmentation Threshold defines the number of bytes used for the fragmentation boundary for directed messages. The purpose of "Fragmentation Threshold" is to increase the transfer reliability thru cutting a MAC Service Data Unit (MSDU) into several MAC Protocol Data Units (MPDU) in smaller size. The RF transmission can not allow to transmit too big frame size due to the heavy interference caused by the big size of transmission frame. But if the frame size is too small, it will create the overhead during the transmission.

Gateway: a device that interconnects networks with different, incompatible communication protocols.

HEX: Hexadecimal, HEX, consists of numbers from 0 – 9 and letters from A – F.

IEEE: The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers, which is the largest technical professional society that promotes the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession. The IEEE fosters the development of standards that often become national and international standards.

Infrastructure: An infrastructure network is a wireless network or other small network in which the wireless network devices are made a part of the network through the Access Point which connects them to the rest of the network.

ISM Band: The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4GHz, in particular, is being made available worldwide.

MAC Address: Media Access Control Address is a unique hex number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

Multicasting: Sending data to a group of nodes instead of a single destination.

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Multiple Bridge – One of the additional AP operating modes offered by 54Mbps Access Point, which allows a group of APs that consists of two or more APs to connect two or more Ethernet networks or Ethernet enabled clients together. The way that multiple bridge setups is based on the topology of Ad-Hoc mode.
Node: A network junction or connection point, typically a computer or workstation.
Packet: A unit of data routed between an origin and a destination in a network.
PLCP: Physical layer convergence protocol
PPDU: PLCP protocol data unit
Preamble Type: During transmission, the PSDU shall be appended to a PLCP preamble and header to create the PPDU. Two different preambles and headers are defined as the mandatory supported long preamble and header which interoperates with the current 1 and 2 Mbit/s DSSS specification as described in IEEE Std 802.11-1999, and an optional short preamble and header. At the receiver, the PLCP preamble and header are processed to aid in demodulation and delivery of the PSDU. The optional short preamble and header is intended for application where maximum throughput is desired and interoperability with legacy and non-short-preamble capable equipment is not consideration. That is, it is expected to be used only in networks of like equipment that can all handle the optional mode. (IEEE 802.11b standard)
PSDU: PLCP service data unit
Roaming: A LAN mobile user moves around an ESS and enjoys a continuous connection to an Infrastructure network.
RTS: Request **T**o **S**end. An RS-232 signal sent from the transmitting station to the receiving station requesting permission to transmit.
RTS Threshold: Transmitters contending for the medium may not be aware of each other. RTS/CTS mechanism can solve this “Hidden Node Problem”. If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.
SSID: Service Set Identifier, which is a unique name shared among all clients and nodes in a wireless network. The SSID must be identical for each clients and nodes in the wireless network.
Subnet Mask: The method used for splitting IP networks into a series of sub-groups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.
TCP/IP: Transmission Control Protocol/ Internet Protocol. The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network, i.e. intranet or internet. When you

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are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

Throughput: The amount of data transferred successfully from one point to another in a given period of time.

WEP: Wired Equivalent Privacy (WEP) is an encryption scheme used to protect wireless data communication. To enable the icon will prevent other stations without the same WEP key from linking with the AP.

Wireless Bridge – One of the additional AP operating modes offered by 54mpbs Access Point, which allows a pair of APs to act as the bridge that connects two Ethernet networks or Ethernet enabled clients together.

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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.

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.

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

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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

Highest SAR Value: 0.273W/kg