

802.11b+g Wireless LAN

USB Adapter

WUG2690

User's Manual

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 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.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains FCC ID: MQ4WUG2690”.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

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INTRODUCTION

The **802.11b+g Wireless LAN USB Adapter** is designed for a USB type A port of a laptop or desktop computer for creating a wireless workstation. It is USB 2.0 compliant which connects to any available USB port on a notebook or desktop computer.

The **802.11b+g Wireless LAN USB Adapter** complies with **IEEE 802.11g** standard that offers a data rate up to **54Mbps** in a wireless LAN environment. It is backward compliant with IEEE 802.11b specification. The high-speed wireless network card can plug into your notebook or desktop PC and accesses to the LAN or peer-to-peer networking easily without wires or cables. Whether you're at your desk or in the boardroom, it allows you to share printers, files, and other network resources.

Features

- Complies with IEEE 802.11g standard for 2.4GHz Wireless LAN
- USB 2.0 compliant
- USB Plug & Play
- Interoperable with existing network infrastructure
- Secure information transmission
- Freedom to roam while staying connected
- Compatible with specialty wireless products and services
- Up to 54 Mbps data rate
- Low power consumption
- Easy to install and configure

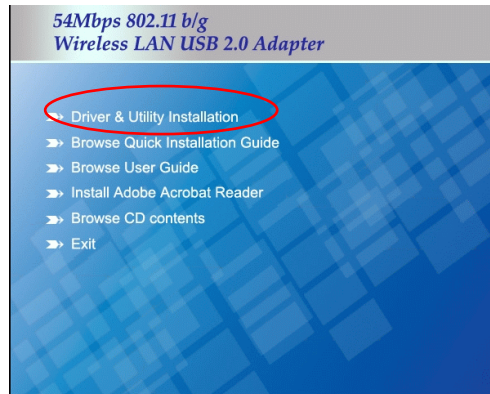
SOFTWARE INSTALLATION

Install the Driver & Utility

Caution!

Do not insert the wireless LAN adapter into your computer until the procedures in “ Install the Driver& Utility” have been performed.

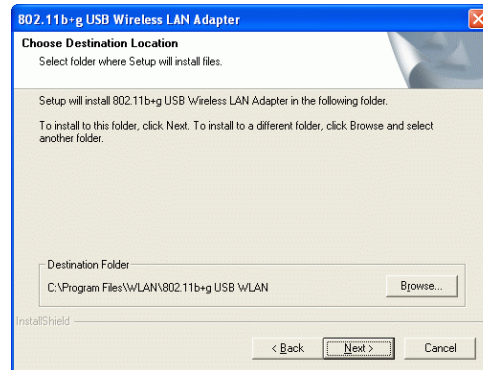
1. Exit all Windows programs. Insert the included CD-ROM into your computer. The CD-ROM will run automatically.
2. When the Main Menu screen appears, click “ **Driver & Utility Installation**” to continue.



3. When the Welcome screen appears, click **Next** to continue.



4. The installation program will start running automatically. Follow the on-screen instruction to proceed.



5. Click **Finish** to complete the software installation.



HARDWARE INSTALLATION

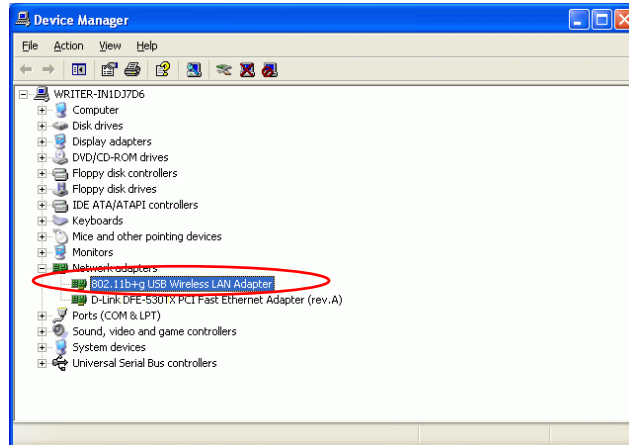
Note: Before you install the device to your computer, make sure you have installed the **driver** and **utility** as described in the previous section.

Windows 98SE/2000/ME / XP

1. Locate your USB host and insert the USB Adapter.
2. Once the device has been inserted to your computer, Windows will detect the new hardware.

Verify

To verify if the device exists in your computer and is enabled, go to **Start** → **Settings** → **Control Panel** → **System** (→ **Hardware**) → **Device Manager**. Expand the **Network Adapters** category. If the **802.11b+g USB Wireless LAN Adapter** is listed here, it means that your device is properly installed and enabled.

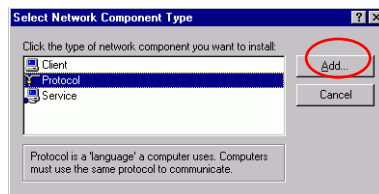


NETWORK CONNECTION

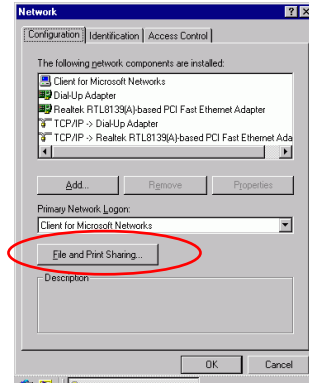
Once the device driver is well installed, a network setting described in the following should be also established.

In Windows 98SE/ME

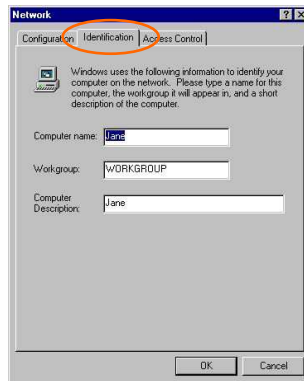
1. Go to **Start → Settings → Control Panel → Network**.
2. Make sure that all the required components are installed. If any components are missing, click on the **Add** button to add them in.



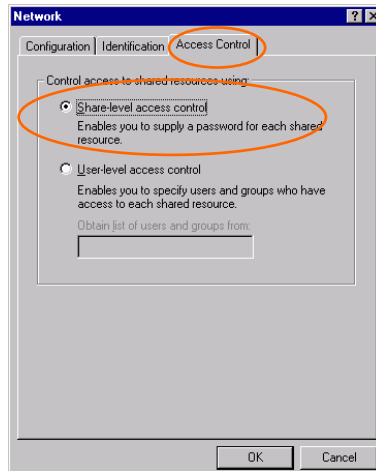
3. For making your computer visible on the network, enable the **File and Print Sharing**.



4. Click the **Identification** tab. Make up a name that is unique from the other computers' names on the network. Type the name of your workgroup, which should be the same used by all of the other PCs on the network.



5. Click the **Access Control** tab. Make sure that “**Share-level access control**” is selected. If connecting to a Netware server, share level can be set to “**User-level access control.**”



6. When finished, restart your computer to activate the new device.

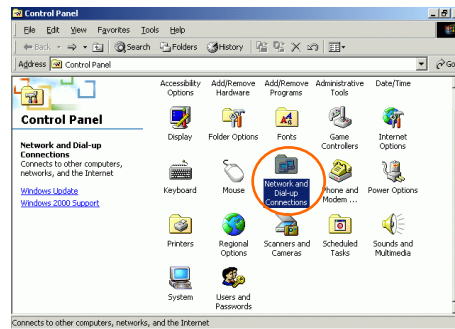
In Windows 2000/XP

1. (In Windows 2000)

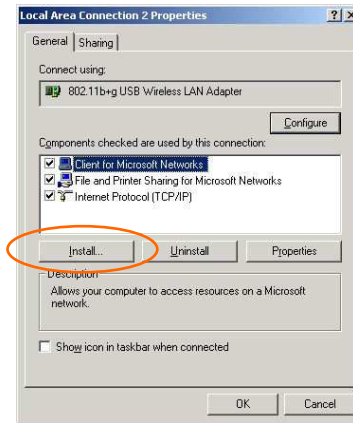
Go to **Start** → **Settings** → **Control Panel** → **Network and Dial-up Connections** → **Local Area Connection** → **Properties**.

(In Windows XP)

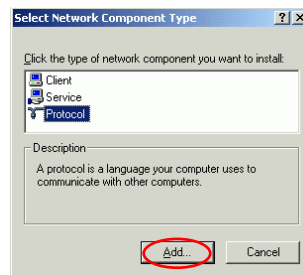
Go to **Start** → **Control Panel** → **Network and Internet Connections** → **Network Connection** → **Wireless Network Connection** → **Properties**.



2. Make sure that all the required components are installed.



3. If any components are missing, click on the **Install...** button to select the **Client/Service/Protocol** required. After selecting the component you need, click **Add...** to add it in.

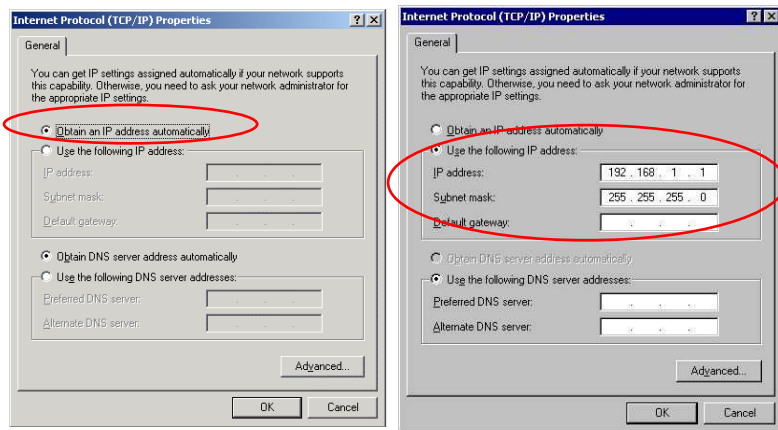


4. For making your computer visible on the network, make sure you have installed **File and Printer Sharing for Microsoft Networks**.

IP Address

Note: When assigning IP Addresses to the computers on the network, remember to have the IP address for each computer set on the same subnet mask. If your Broadband Router use DHCP technology, however, it won't be necessary for you to assign Static IP Address for your computer.

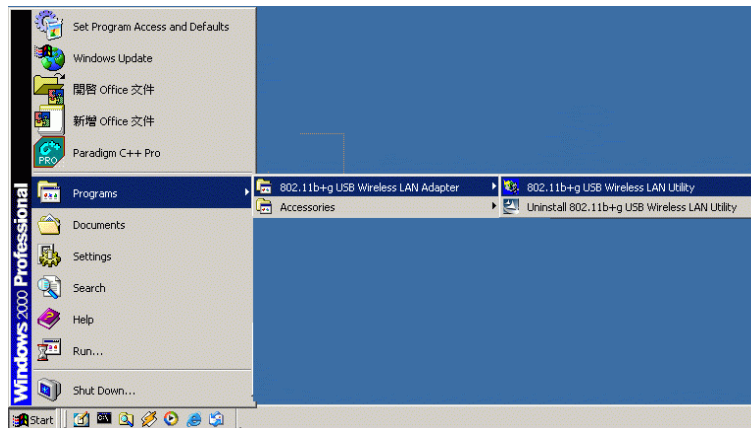
1. To configure a dynamic IP address (i.e. if your broadband Router has the DHCP technology), check the **Obtain an IP Address Automatically** option.
2. To configure a fixed IP address (if you broadband Router is not DHCP supported, or when you need to assign a static IP address), check the **Use the following IP address** option. Then, enter an IP address into the empty field, for example, enter **192.168.1.1** in the IP address field, and **255.255.255.0** for the Subnet Mask.



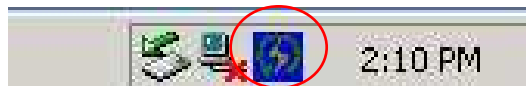
Configuration Utility

After the Wireless adapter has been successfully installed, users can use the included Configuration Utility to set their preference.

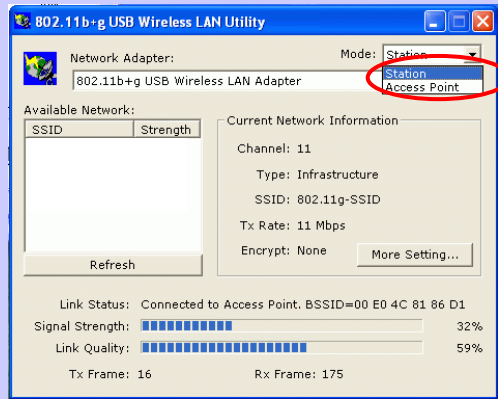
Go to **Start**→ **Program**→**802.11b+g Wireless LAN** → **802.11b+g USB Wireless LAN Utility**



For **Windows 2000/XP**, the Configuration Utility icon will also appear in the taskbar. You can open the Configuration Utility by clicking the icon.

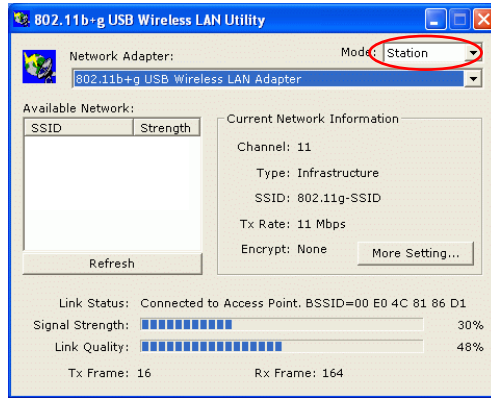


Note: There will be two modes – **Station** and **Access Point** for you to switch, you can select the mode you need from the pull-down menu.

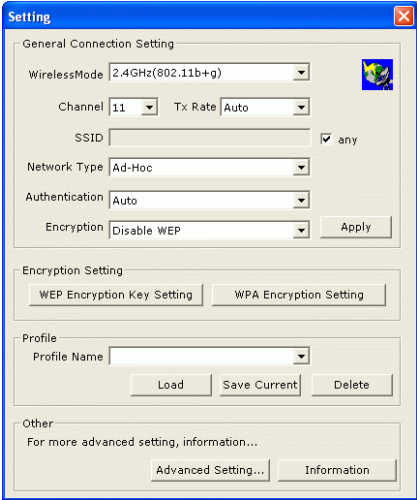


Station

Select **Station** mode, and you will see the following figure.



Channel	Shows the selected channel that is currently in use.
Type	<p>The infrastructure is intended for the connection between wireless network cards and an Access Point. With the wireless adapter, you can connect wireless LAN to a wired global network via an Access Point</p> <p>The Ad-hoc lets you set a small wireless workgroup easily and quickly. Equipped with the wireless adapter, you can share files and printers between each PC and laptop.</p>
SSID	<p>The SSID is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network.</p> <p>It shows the current SSID setting of the Wireless USB Adapter.</p>
Tx Rate	Click the down arrow ▼ to select the Tx Rate from Auto, 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54 Mbps , you can select up to

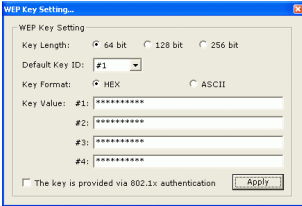
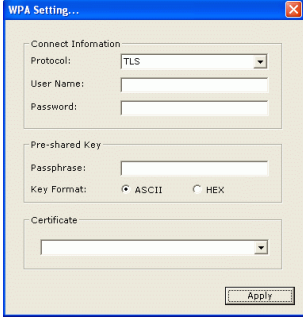
	54 Mbps.
Encrypt	WEP is a data privacy mechanism based on a 64-bit/128-bit shared key algorithm.
More Setting...	<p>Click the More Setting button to configure, see the following figure (Refer to the More Setting part on the next page for more information about this figure) :</p> 
Link Status	Displays the information about the status of the communication between the Wireless USB Adapter and the Access Point.
Signal Strength	Displays the signal strength of the connection between the Wireless USB Adapter and the Access Point it connects.
Link Quality	Displays the link quality of the connection between the Wireless USB Adapter and the Access Point it connects.
Tx Frame	The quantities for the wireless network card transmit. (Frame: The unit of packet)

Rx Frame	The quantities for the wireless network card receive. (Frame: The unit of packet)
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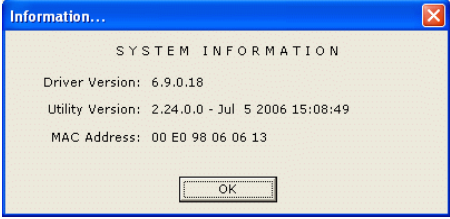
More Setting...



Wireless Mode	This column displays the wireless mode of your wireless adapter as 2.4GHz (802.11b+g).
Channel	The Channel will change automatically according to AP's setting.
Tx Rate	Click the down arrow ▼ to select the Tx Rate from Auto, 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54 Mbps , you can select up to 54 Mbps .
SSID	The SSID is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network.
Any	You may select to have SSID by choosing any , the SSID will be obtained automatically from whichever Access Point with the optimal signal for this device. If any is left unchecked, it means you will have to enter the SSID manually.

Network Type	<p>The infrastructure is intended for the connection between wireless network cards and an Access Point. With the wireless adapter, you can connect wireless LAN to a wired global network via an Access Point</p> <p>The Ad-hoc lets you set a small wireless workgroup easily and quickly. Equipped with the wireless adapter, you can share files and printers between each PC and laptop.</p>
Encryption	<p>You can only set your Security preference when Change is selected and then all fields are active for change. To save settings, press Apply when you are done with the settings. Select from the pull-down menu, there are four options including Disable, WEP, TKIP and AES.</p>
Authentication Mode	<p>You can select the Authentication Mode from the pull-down menu, including Auto, Open System, Shared Key, WPA/WPA2, WPA PSK and WPA2 PSK.</p>
Encryption Setting	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>WEP Encryption Setting</p>  <p>The screenshot shows the 'WEP Key Setting' dialog box. It has a title bar 'WEP Key Setting...'. Inside, there are radio buttons for 'Key Length' (64 bit, 128 bit, 256 bit) with 64 bit selected. A 'Default Key ID' dropdown menu is set to '#1'. There are radio buttons for 'Key Format' (HEX, ASCII) with HEX selected. Below are four 'Key Value' fields labeled #1, #2, #3, and #4, each containing asterisks. At the bottom, there is a checkbox 'The key is provided via 802.1x authentication' which is unchecked, and an 'Apply' button.</p> </div> <div style="width: 45%;"> <p>WPA Encryption Setting :</p>  <p>The screenshot shows the 'WPA Setting...' dialog box. It has a title bar 'WPA Setting...'. Under 'Connect Information', there is a 'Protocol' dropdown menu set to 'TLS', and fields for 'User Name' and 'Password'. Under 'Pre-shared Key', there is a 'Passphrase' field and a 'Key Format' section with radio buttons for 'ASCII' (selected) and 'HEX'. At the bottom, there is a 'Certificate' dropdown menu and an 'Apply' button.</p> </div> </div> <p>You can only set your Security preference when Change is selected and then all fields are active for change. To save settings, press Apply when you are done with the settings.</p> <p>WEP Encryption Setting</p> <p>Key length : You may select the key length between 64 (bit), 128 (bit) and 256 (bit).</p> <p>Default Key ID : You can set your default key ID at #1~#4.</p>

	<p>Key Format : Select Hexadecimal if you are using hexadecimal numbers (0-9, or A-F).</p> <p>Select ASCII if you are using ASCII characters (case-sensitive).</p> <p>10 hexadecimal digits or 5 ASCII characters are needed if 64-bit WEP is used; 26 hexadecimal digits or 13 ASCII characters are needed if 128-bit WEP is used ; 58 hexadecimal digits or 29 ASCII characters are needed if 256-bit WEP is used.</p> <p>Key Value:</p> <p>#1-#4 This setting is the configuration key used in accessing the wireless network via WEP encryption. You can specify up to 4 different keys to <i>encrypt</i> or <i>decrypt</i> wireless data.</p> <p><input type="checkbox"/> The Key is provided via 802.1x authentication : Please query your network manager about the currently used security protocol, if 802.1x authentication is currently used, then you can check this item to enable 802.1x security protocol. The key value will be configured automatically, just click Apply to take effect.</p> <p>WPA/WPA2 Encryption Setting</p> <p>Protocol : This panel enables you to select an authentication protocol.</p> <p>User Name : Type in the user name assigned to the certificate.</p> <p>Password : This panel is available when EAP-TLS is not selected (either MSCHAP V2 over PEAP is selected with WEP or LEAP is selected for CCX). This panel enables you to enter a login name and password or request that the driver prompt for them when you connect to a network.</p> <p>Passphrase : Enter the key that you are sharing with the network for the WLAN connection.</p> <p>Key Format : Select Hex if you are using hexadecimal numbers (0-9, or A-F).</p> <p>Select ASCII if you are using ASCII characters.</p> <p>Certificate : Please query your network manager about the certificate, select the same certificate as the certification server.</p>
Profile Name	You may enter a new profile name in this column.
Load	You may select already saved file from the " Profile name " list,

	and then press " Load ". The setting status will then be restored.
Save Current	You may save current setting to profile and add one new item in " Profile name ".
Delete	Delete the files in the " Profile name ".
Advanced Setting	Click the Advanced Setting button to configure the following figure (Refer to the Advanced Setting part on the next page to see more information about the Advanced Setting) :
Information	Click the Information button to show the Driver Version, Utility Version and MAC Address of the system.  <p>The screenshot shows a dialog box titled "Information..." with a close button (X) in the top right corner. The dialog box contains the following text: "SYSTEM INFORMATION", "Driver Version: 6.9.0.18", "Utility Version: 2.24.0.0 - Jul 5 2006 15:08:49", and "MAC Address: 00 E0 98 06 06 13". At the bottom of the dialog box is an "OK" button.</p>

User Interface

Language	Select English or Traditional Chinese.
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Power Consumption Setting

Continuous Access Mode (CAM)	When this mode is selected, the power supply will be normally provided even when there is no throughput.
Maximum Power-Saving Mode	When this mode is selected, this device will stay in power saving mode even when there is high volume of throughput.
Fast Power-Saving Mode	When this mode is selected, the power mode will switch between CAM and Maximum Power-Saving Mode depending on the volume of throughput. The device driver checks the total bytes (only data frame) every 4 seconds to decide the power mode. If the total bytes sent exceed 10k bytes, the device

	driver will choose “CAM”. If the total bytes are less than 10k bytes, however, the device driver will choose “Maximum Power-Saving Mode”.
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Fragmentation Threshold	The mechanism of Fragmentation Threshold is used to improve the efficiency when high traffic flows along in the wireless network. If your 802. Wireless LAN Adapter 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 .
RTS/CTS Threshold	RTS/CTS Threshold is a mechanism implemented to prevent the “ Hidden Node ” problem. If the “Hidden Node” problem is an issue, users have to specify the packet size. <u>The RTS/CTS mechanism will be activated if the data size exceeds the value you set.</u> The default value is 2347 . This value should remain at its default setting of 2347 . Should you encounter inconsistent data flow, only minor modifications of this value are recommended.

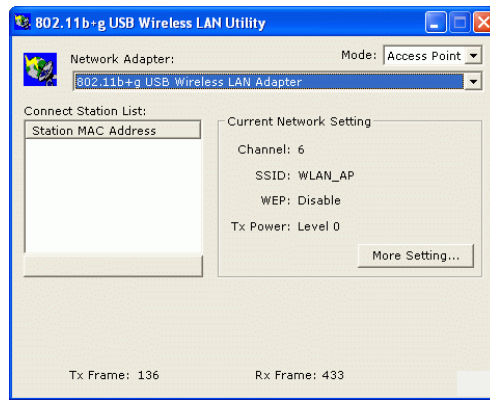
Access Point

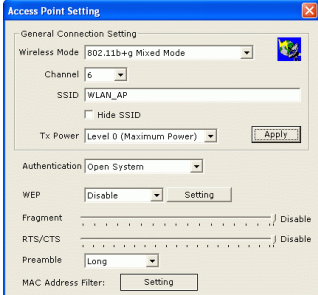
To set your **802.11g Wireless LAN USB Adapter** as an Access Point (AP). In access point mode, the **802.11g Wireless LAN USB Adapter** will function as an access point. This allows you to set up your wireless networks without using a dedicated AP device. Up to 16 wireless stations can associate to the **802.11g Wireless LAN USB Adapter**.

To the **802.11g Wireless LAN USB Adapter** to bridge your wired and wireless network, the following requirements must be met :

1. The **802.11g Wireless LAN USB Adapter** must be installed on a computer connected to the wired network.
2. Either configure network sharing (refer to the appendix for an example) or bridge the two interfaces (wireless and wired) on the computer.
3. Set the wireless station's IP address to be in the same subnet as the computer in which the **802.11g Wireless LAN USB Adapter** is installed. Refer to **Configuring the Wireless Station Computer**.

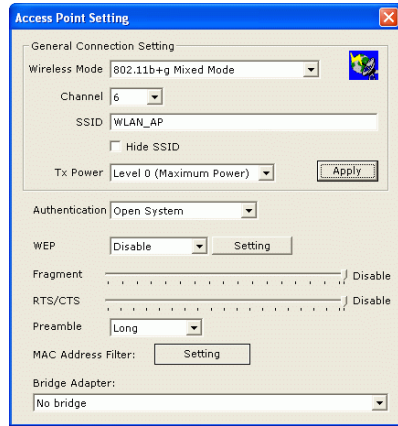
Select the Access Point mode, and you will see the following figure.



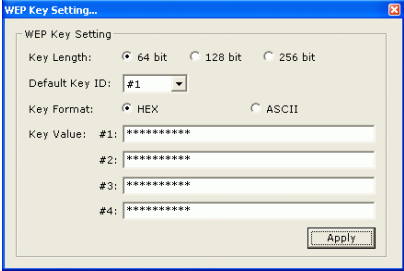
Network Adapter	You can select the network adapter from the pull-down menu, it shows the device itself (the 802.11g Wireless LAN USB Adapter) and also shows the devices supported by the 802.11g Wireless LAN USB Adapter.
Connection Station List	It shows the stations which are now connecting to the AP.
Channel	Shows the selected channel that is currently in use.
SSID	The SSID is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network. It shows the current SSID setting of the Wireless USB Adapter.
WEP	The WEP function here has been disabled. If you want to change to Enabled, click More Setting... to configure.
Tx Power	The Tx power here is configured as Level 0, to change the Tx power, click More Setting... to configure.
More Setting...	Click the More Setting... button and the following figure will appear for you to configure (Refer to the More Setting... part on the next page for more information about this figure.) 

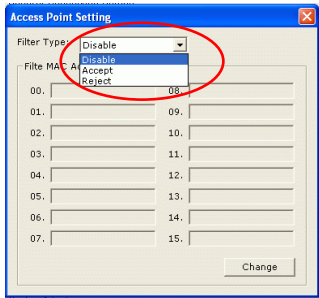
Tx Frame	The quantities for the wireless network card transmit. (Frame: The unit of packet)
Rx Frame	The quantities for the wireless network card receive. (Frame: The unit of packet)

More Setting...



Wireless Mode	Select the wireless mode from the pull-down menu, there are three modes for you to select, including 802.11b+g Mixed Mode , 802.11g only and 802.11b only .
Channel	Shows the selected channel that is currently in use.
SSID	The SSID is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network. It shows the current SSID setting of the Wireless USB Adapter.
Tx Power	Select the Tx power from the pull-down menu,

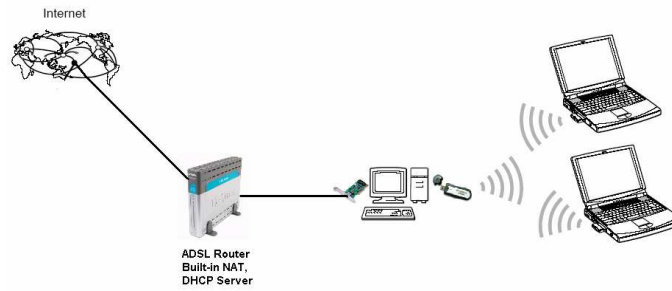
	there are four levels including Level 1, Level 2, Level 3 (Minimum).
Change or Apply	Click Change to set the General Connection Setting. After Completing the setting Click Apply .
WEP	<p>You can select to Enable or Disable the WEP function by selecting from the pull-down men. Click Setting and the following figure will appear.</p> 
Authentication Mode	Select the Authentication mode from the pull-down menu, there are two modes for you to choose, Open System and Shared Key .
Fragment	The mechanism of Fragmentation Threshold is used to improve the efficiency when high traffic flows along in the wireless network. If your 802. Wireless LAN Adapter 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 .
RTS/CTS	RTS/CTS Threshold is a mechanism implemented to prevent the “ Hidden Node ” problem. If the “Hidden Node” problem is an issue, users have to specify the packet size. <u>The RTS/CTS mechanism will be activated if the data size exceeds the value you set.</u> The default value is 2347 .

	This value should remain at its default setting of 2347 . Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
Preamble	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. Select from the pull-down menu to change the Preamble type into Long or Short .
MAC Address Filter	<p>Click Setting and you will see the following figure. You can select the Filter Type from the pull-down menu.</p> <p>Disable : Select to disable the filter function.</p> <p>Accept : You can type in 15 MAC addresses by clicking Change. If you select Accept, then the MAC address(es) you type in will be connected to the AP.</p> <p>Reject : You can type in 15 MAC addresses by clicking Change. If you select Reject, then the MAC address(es) you type in will not be connected to the AP.</p> 

Bridge Adapter	The stations will not be allowed to connect to the internet if you select No bridge . The stations will be allowed to connect to the internet if you select the device listed in the pull-down menu.
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Appendix

Soft AP Configuration



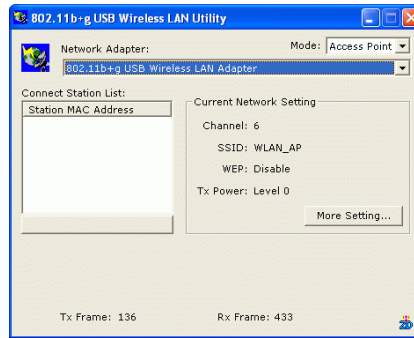
Setup Requirement:

To bridge your wired and wireless network using 802.11b+g Wireless LAN USB Adapter, the following must be met:

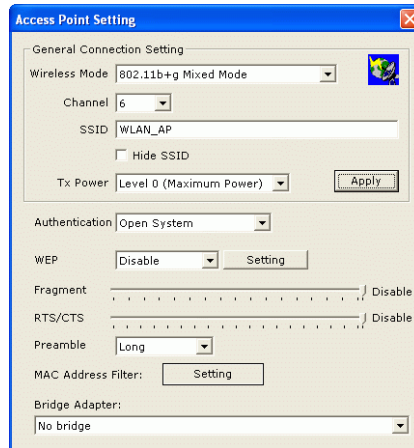
1. Install the 802.11b+g Wireless LAN USB Adapter on the LAN-connected computer.
2. The Soft Access Point should be connected to a network switch, hub or a Broadband Router. Use a standard Category 5 UTP Ethernet cable with an RJ-45 connector to connect the Soft Access Point to one of router, hub, or switch.
3. The computer that you are installing the wireless card into has an Ethernet connection, and is connected to a LAN with a DHCP server.

SoftAP Configuration :

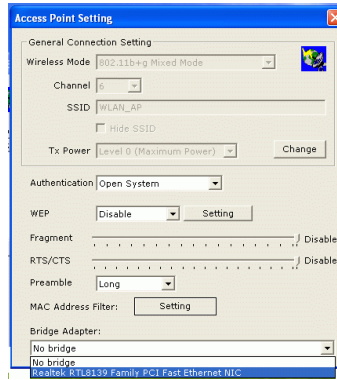
1. Select the Access Point mode, and you will see the following figure



2. Click the **More Setting...** button and the following figure will appear for you to configure



3. Select the wired Network Adapter that has already installed in the PC from the pull-down menu.



4. If the network connected to the wired LAN card has a DHCP server, you just need to configure the wireless station as a DHCP client (select **Obtain an IP address automatically**). If the network does not have a DHCP server, you must assign a fixed IP to the wired PC (select Use the following IP address).

