User's Guide

for

XPC 802.11b/g Wireless Kit

Shuttle®

User's Guide for XPC 802.11b/g Wireless Kit
Manual Version 1.0

FCC Regulation Information

The 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 communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

The equipment is for home or office use.

Copyright

Disclaimer

Table of Contents

1. Introduction

The XPC 802.11b/g Wireless Kit aims to let your XPC quickly and seamlessly communicate with a 802.11b/g (at up to 54 Mbps) networks. Wireless networking uses radio frequencies to transmit and receive data between your XPC's and other network devices. With this Wireless Kit, surfing on the Internet couldn't be any easier. Simply install the USB connector to the reserve header on mainboard, launch the attached friendly-interfaced program- Shuttle Wireless tool to configure the Module, and you will be ready to experience a LAN (local area network) that can be accessed anywhere. You can operate the network in either an independent mode or an infrastructure mode. The former, which is also known as peer-to-peer or ad-hoc network, lets you directly make connection with other wireless-equipped computers, and the later, the so-called infrastructure network, allows you to communicate with wired LAN via an access point. To obtain the complete benefits your XPC 802.11b/g Wireless Kit provides, please read this manual carefully before using it.

1.1 Features

With XPC 802.11b/g Wireless Kit, you can

✳ exchange data over the air, which minimizes the need for wired connections.

✳ possess the portability and mobility of wireless networking connectivity wherever you are.

✳ operate Ad-Hoc or Infrastructure modes.

✳ utilize up to 256-bit WEP,WPA encryption.

✳ enjoy high-speed data transfer rate up to 54 Mbps.

✳ employ automatic data rate switching which offers maximum reliability, throughput and connectivity.

✳ monitor and configure the network via the supplied friendly-interfaced application ~ **Shuttle Wireless Tool.**

✳ Operate a Software Access Point to share your internet connection with friend family.

1.2 Package Contents

Before starting installation, please make sure the package you purchased includes the following items:

- ✔ **One XPC 802.11b/g Wireless Kit**
- ✔ **One Antenna**
- ✔ **One Antenna cable** (For G,G2,G4,G5,K series)
- ✔ **One Chassis** (For G,G2,G4,G5,K series)
- ✔ **4 x Screws** (For G,G2,G4,G5,K series)
- ✔ **One Driver CD with Shuttle SoftAP**
- ✔ **One User Manual**

If any of the items listed above are missing or damaged, please contact your distributor.

1.3 System Requirements

To properly operate your XPC 802.11b/g Wireless Kit, your computer must meet the following minimum requirements:

- ✔ **Pentium III MHz processor or higher**
- ✔ **128 MB RAM or above**
- ✔ **A CD-ROM drive**
- ✔ **Microsoft Windows 98 SE/ Me/ 2000 or Windows XP**

2. Installation Of The XPC 802.11b/g Wireless Kit

Installing the XPC 802.11b/g Wireless Kit is quick and easy. Simply follow the steps below to install the hardware, followed by a few clicks of the mouse and you will be up and running on your own wireless network.

2.1 Hardware Setup

✸ *STEP 1*

Unfasten the screws on the back panel and remove the case.

✸ *STEP 2*

Use a 6mm screwdriver to puncture the perforated hole on the back panel from the outside in. Once the screwdriver can pass through the hole, carefully snap the metal tag off.

> **Note :** *If the cover still does not detach, carefully bend it by pushing down from the inside of the chassis.*

✸ *STEP 3*
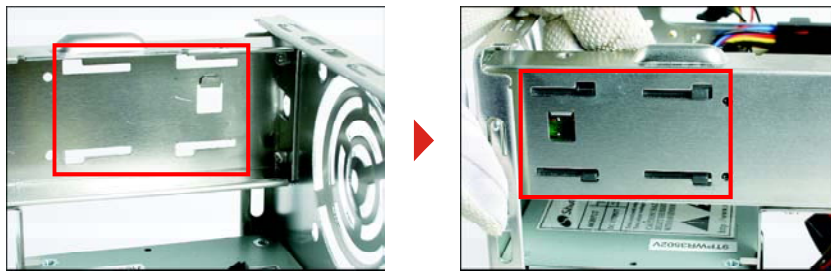
Take out the XPC 802.11b/g Wireless Kit.

> **Note :** *The installation process of XPC 802.11b/g Wireless Kit will be different for each XPC model and dependent on each XPC design. Please refer to the following installation instructions for your XPC model.*

For P series

✻ *STEP 4-1*

Install the XPC 802.11b/g Wireless Kit to the four attachment points as shown below.

✻ *STEP 4-2*

Install the antenna cable connector through the side reserve hole into the back chassis.
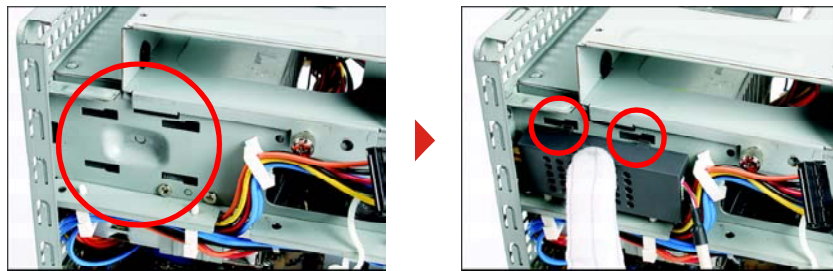
Refer to Step5 (Page10).

> **Caution :** When inserting the cable connector, check the socket alignment and only push horizontally. **Do not** turn or twist the cable.

> **Note :** If some difficulty is found while inserting the antenna socket into the reserve hole, make sure the surface is clean. Finally, check the alignment and then use some more force .
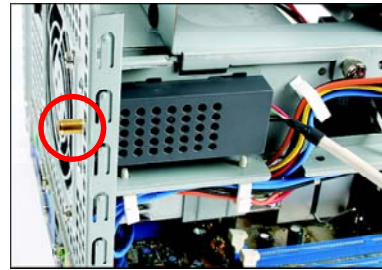
For i series

✳ *STEP 4-1*

Install the XPC 802.11b/g Wireless Kit to the four attachment points as shown below.

✳ *STEP 4-2*

Install the antenna cable connector through the side reserve hole into the back chassis.
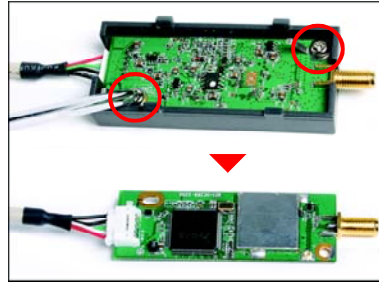
Refer to Step5 (Page10).

Caution : When inserting the cable connector, check the socket alignment and only push horizontally. **Do not** turn or twist the cable.

Note : If some difficulty is found while inserting the antenna socket into the reserve hole, make sure the surface is clean. Finally, check the alignment and then use some more force .
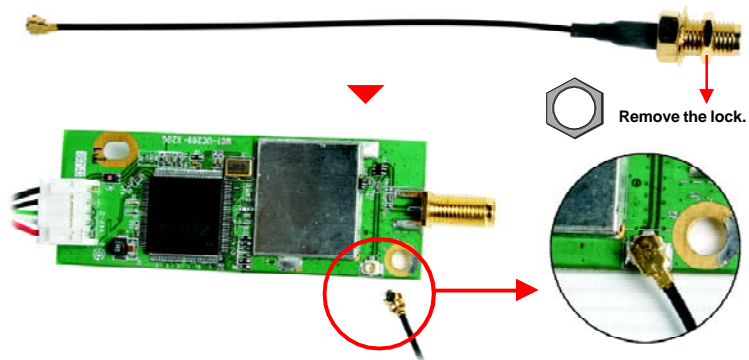
For G,G2,G4,G5 series

� *STEP 4-1*

> Unscrew the two XPC
> 802.11b/g Wireless Kit's
> screws and remove the
> module cover.

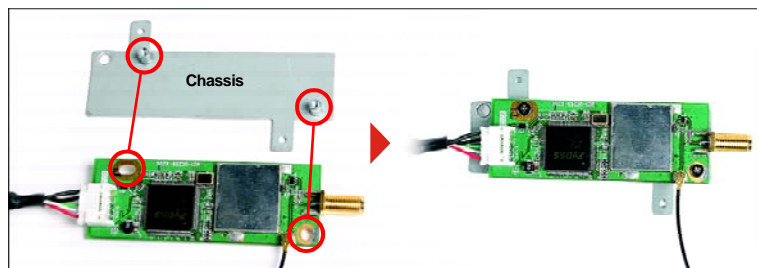✖ *STEP 4-2*

> Take out the Antenna cable connector and remove the lock, then
> install it to the XPC 802.11b/g Wireless Kit.

Remove the lock.

✖ *STEP 4-3*

> Take out the chassis and fasten the XPC 802.11b/g Wireless Kit to
> the chassis with the two screws.

Chassis

✳ *STEP 4-4*

Screw the XPC 802.11b/g
Wireless Kit to the two
holes on the upside of the
chassis arm, near the
rear of the XPC.
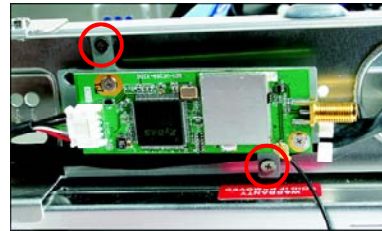
✳ *STEP 4-5*

Install the antenna cable connector through the side reserve hole into the
back chassis.
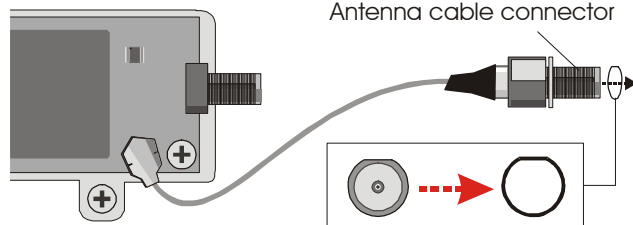
Antenna cable connector

Caution : When inserting the cable connector,
check the socket alignment and only
push horizontally.
Do not turn or twist the cable.

Note : If some difficulty is found while insert-
ing the antenna socket into the reserve
hole, make sure the surface is clean.
Finally, check the alignment and then
use some more force .

✳ *STEP 4-6*

Use a lock to secure the
antenna from the outside.

Refer to Step5 (Page10).

For K series

✽ *STEP 4-1*

> Unscrew the two XPC 802.11b/g Wireless Kit's screws and remove the module cover.

✽ *STEP 4-2*

> Take out the Antenna cable connector and remove the lock, then install it to the XPC 802.11b/g Wireless Kit.


Remove the lock.

✽ *STEP 4-3*

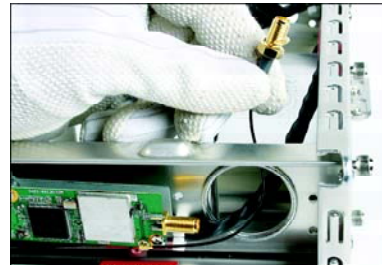> Screw the XPC 802.11b/g Wireless Kit to the two holes on the upside of the chassis arm, near the rear of the XPC.

✱ *STEP 4-4*

Install the antenna cable connector through the side reserve hole into the back chassis.
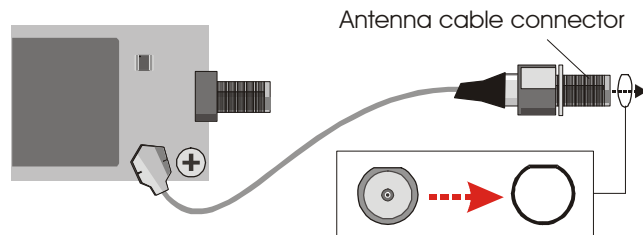
Antenna cable connector

Caution : *When inserting the cable connector, check the socket alignment and only push horizontally.*
Do not turn or twist the cable.

Note : *If some difficulty is found while inserting the antenna socket into the reserve hole, make sure the surface is clean. Finally, check the alignment and then use some more force .*
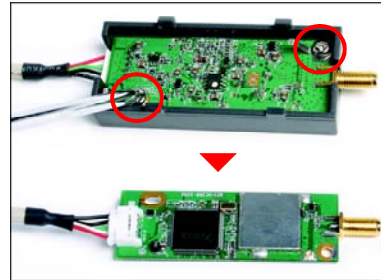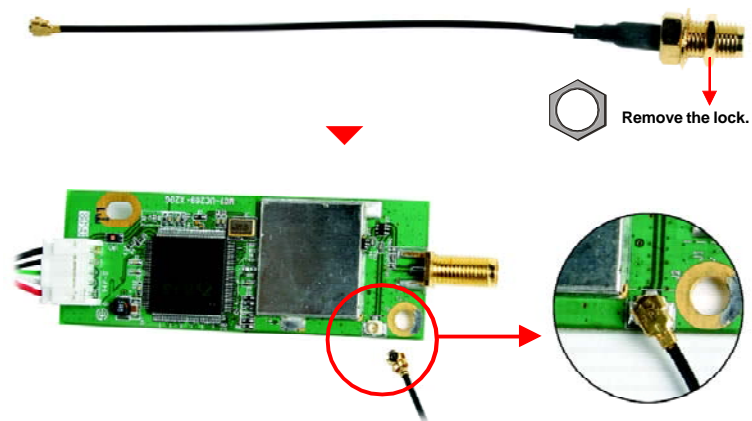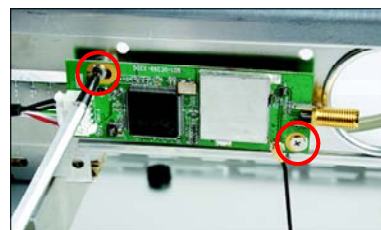

✱ *STEP 4-5*

Use a lock to secure the antenna from the outside.

Refer to Step5 (Page10).
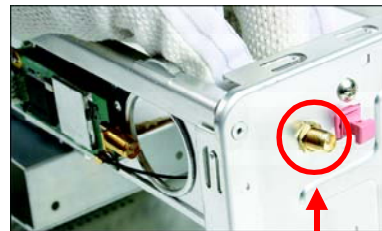
✴ *STEP 5*

Screw the antenna onto the exposed thread. Set the antenna to vertical for good reception.
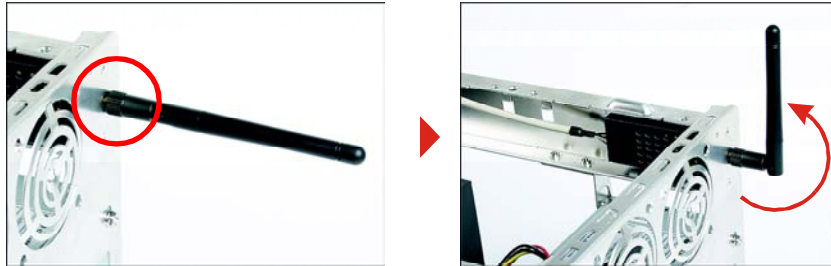
Note : *Make sure all the connectors are aligned in the correct direction.*

✴ *STEP 6*

Connect the signal cable from the XPC 802.11b/g Wireless Kit to the 5-pin USB header located on the motherboard. Double check all connections before continuing.
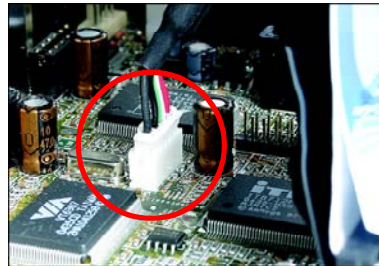
✴ *STEP 7*

Attach the case and fasten the thumbscrews to complete the hardware installation.

2.2 Software Installation

✳ **Step 1: Install the Driver & Utility**

✳ **For Windows 98, 2000, ME and XP users**

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.
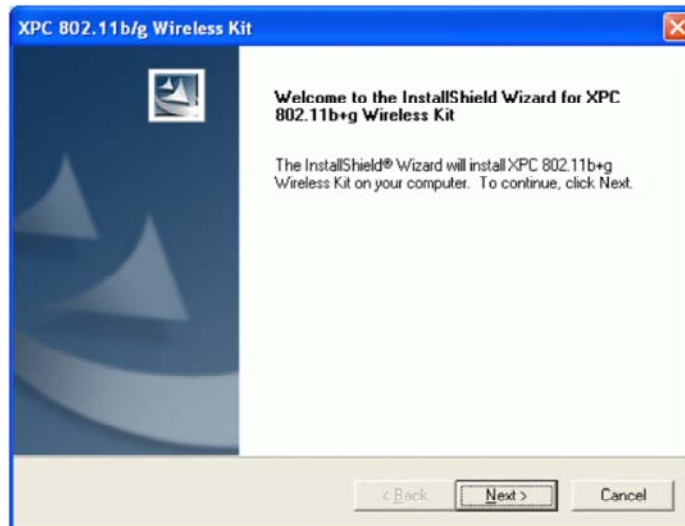
4. The installation program will start running automatically. Follow the on-screen instruction to proceed.
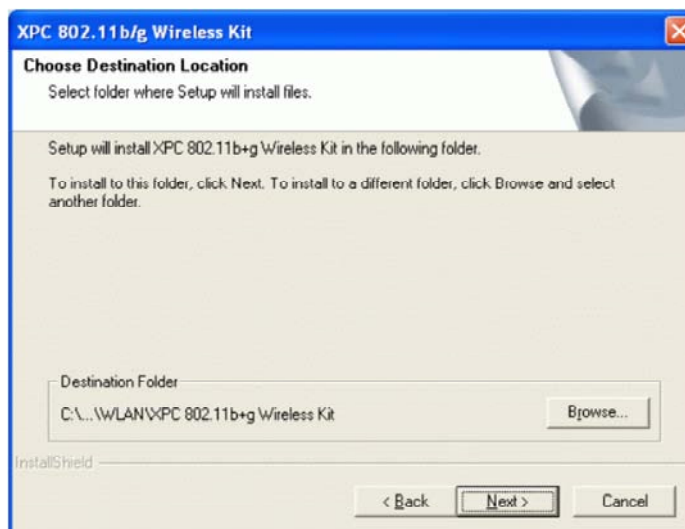
5. Click **Finish** to complete the software installation.

2.3 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.
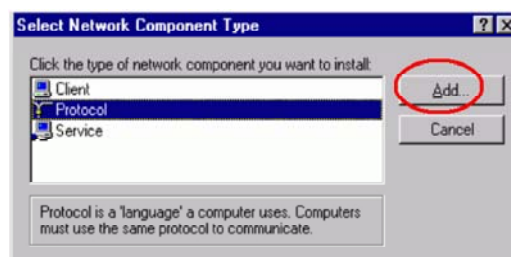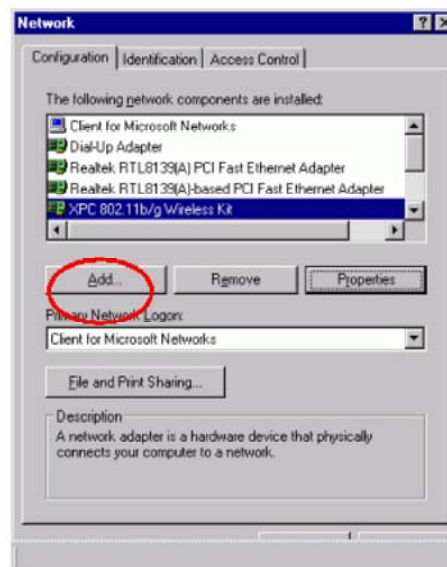
3. For making your computer visible on the network, enable the **File and Print Sharing.**
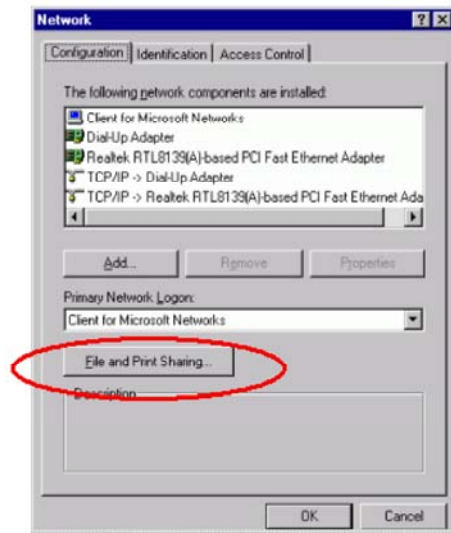
4. Click the **Identification** tab. Make up a name that is unique from the other computers' names on the network.

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."**
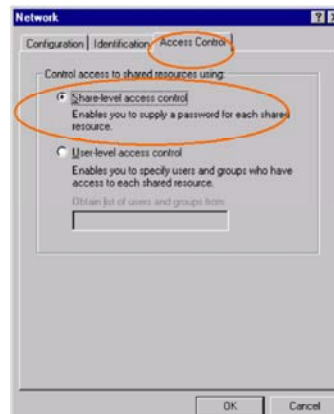
6. When finished, restart your computer to activate the new device. In Windows 2000/XP.

1. In Windows 2000

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

1. In Windows XP

Go to **Start a Control Panel → Network and Internet Connections → Network Connection → Wireless Network Connection Enabled USB Wireless Network Adapter.**

2. Make sure that all the required components are installed.
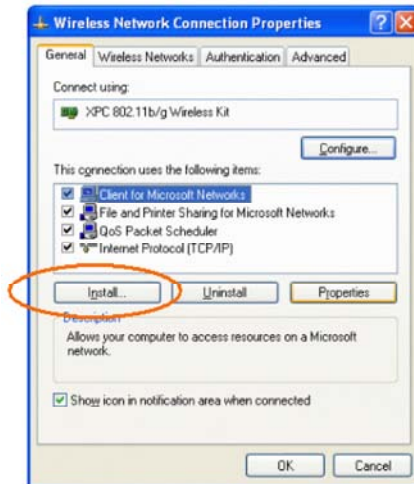
3. If any components are missing, click on the **Install...** button to select the **Client/Service/Protocol** required. After selecting the component you need, click **Add...** to add it in.
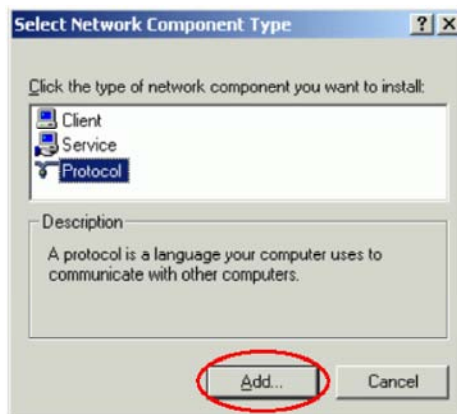
4. For making your computer visible on the network, make sure you have installed **File and Printer Sharing for Microsoft Networks.**

2.4 IP Address

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.
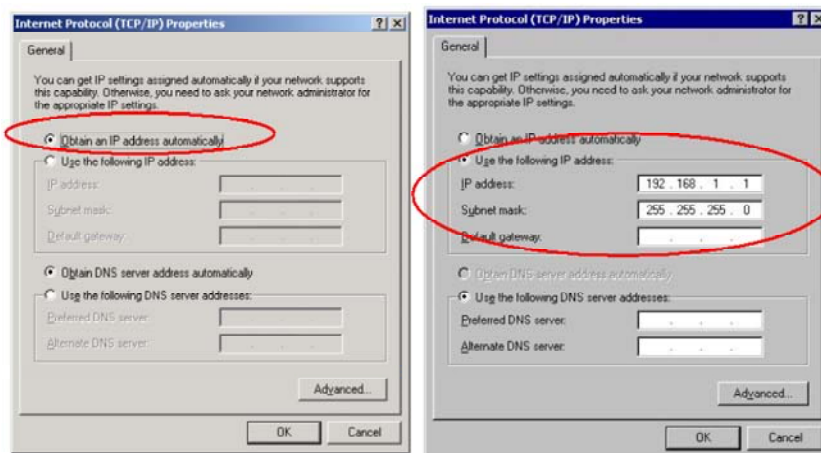
2.5 Configuration Utility

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

Go to **Start → (All) Program → XPC 802.11b+g Wireless Kit → XPC 802.11b+g USB Wireless Utility**
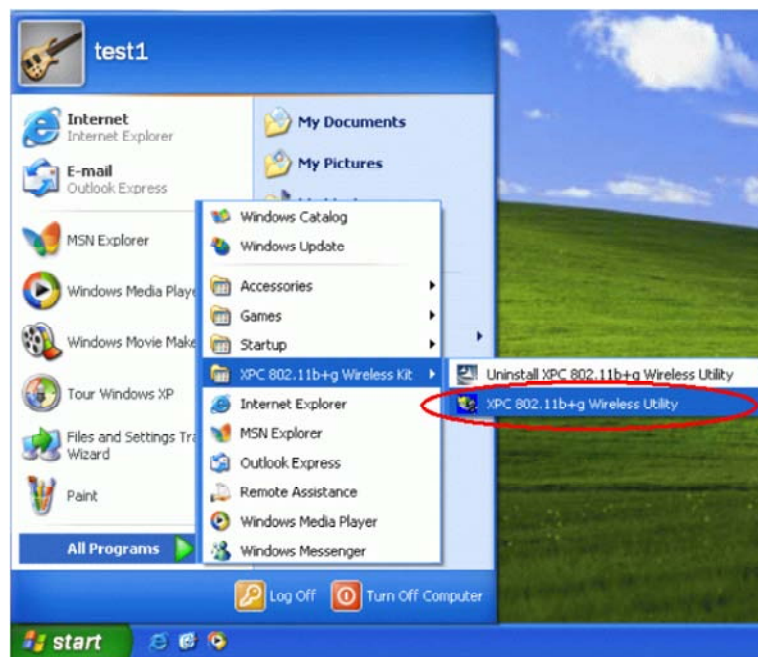
For **Windows 2000/XP**, the Configuration Utility icon will also appear in the taskbar. You can open the Configuration Utility by clicking the icon.

*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.*
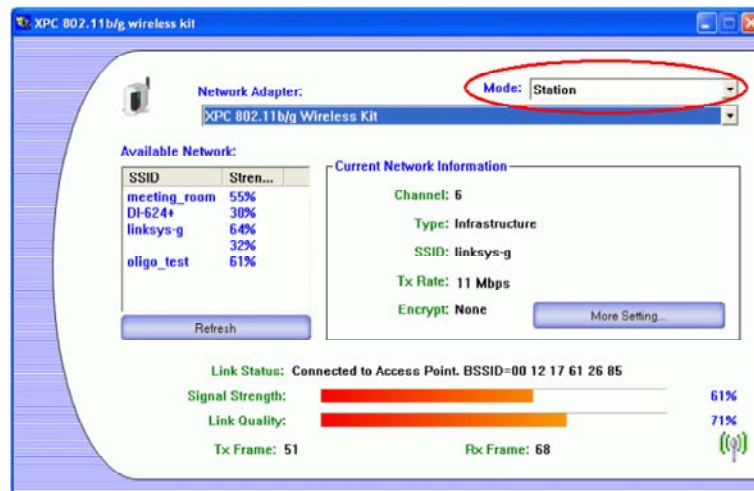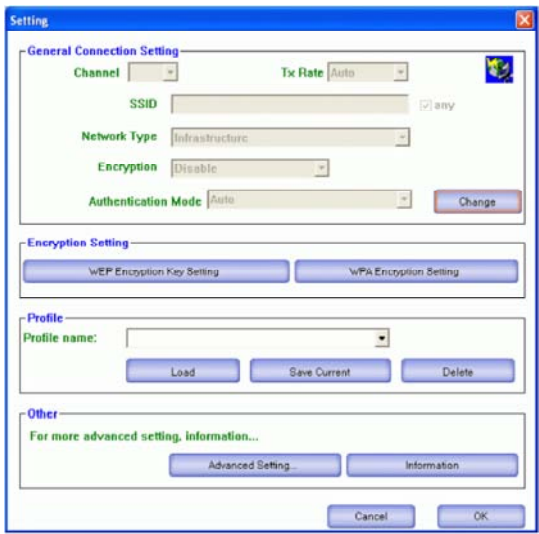
2.6 Station

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

Channel	Shows the selected channel that is currently in use. (There are 14 channels available, depending on the country.)
Type	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 **Poin**t. 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.
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 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 /256-bit shared key algorithm.
More Setting...	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):
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)

More Setting

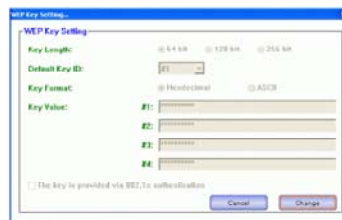|	
Channel	The Channel will change automatically according to APs setting.
Tx Rate	Click the down ▼ arrow to select the Tx Rate from **Auto, 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, 54 Mbps,** you can select up to **54 Mbps.**
SSID	The **SSID** is the unique name shared among all points in your wireless 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	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.** 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.
Encryption	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.**
Authentication Mode	You can select the Authentication Mode from the pull-down men, including **Auto, Open System, Shared Key, WPA and WPA PSK.**

Encryption Setting	*WEP Encryption Setting*	
	WPA Encryption Setting	
	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. *WEP Encryption Setting.* **Key length : 64 (bit), 128 (bit) or 256 (bit).** **Default Key ID :** You can set your default key ID at #1~#4. **Key Format :** Select **Hexadecimal** if you are using hexadecimal numbers **(0-9, or A-F).** Select **ASCII** if you are using ASCII characters **(case-sensitive).** **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-bitWEP** is used; **58 hexadecimal digits** or **29 ASCII characters** are needed if **256-bitWEP** is used. **Key Value (#1~#4) :** This setting is the configuration key used in access-ing the wireless network via WEP encryption. You can speci-fy up to 4 different keys to encrypt or decrypt wireless data.	

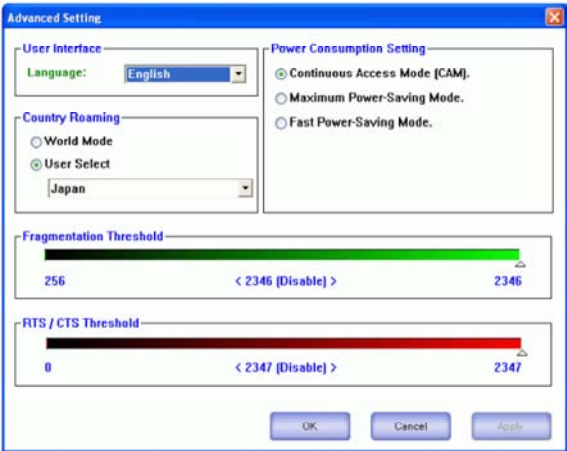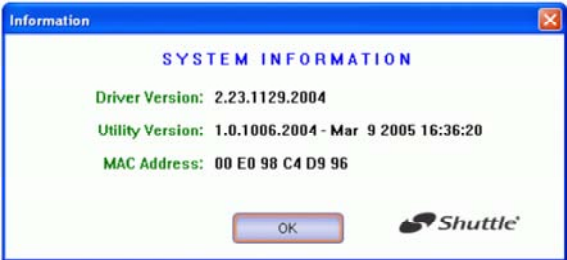|	
	The Key is provided via 802.1x authenticationG : Please query your network manager about the currently used security protocol, if 802.1x authentication is currently used, then you can check this item to enable 802.1x security protocol. The key value will be configured automatically, just click **"Apply"** to take effect. *WPA Encryption Setting* **Protocol :** This panel enables you to select an authentication protocol. **User Name :** Type in the user name assigned to the certificate. **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. **Passphrase :** Enter the key that you are sharing with the network for the WLAN connection. **Key Format :** Select **Hex** if you are using hexadecimal numbers **(0-9, or A-F).** Select **ASCII** if you are using ASCII characters. **Certificate :** Please query your network manager about the certificate, select the same certificate as the certification server.
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.

Advanced Setting

User Interface	
Language	Select your preferred Language.
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.

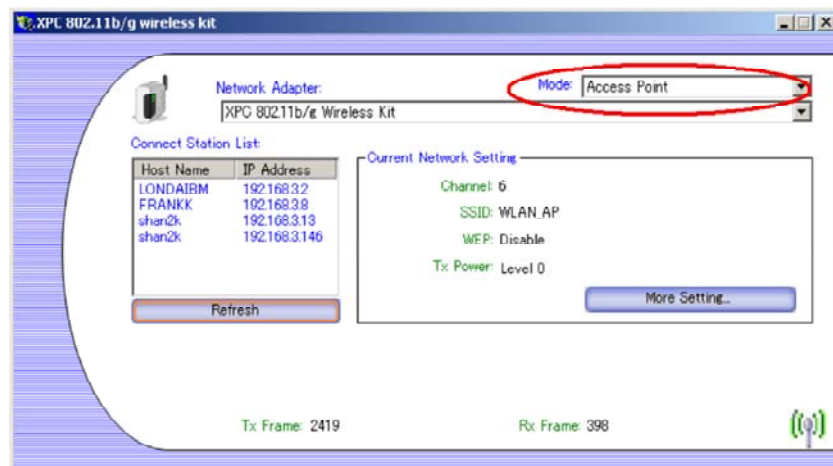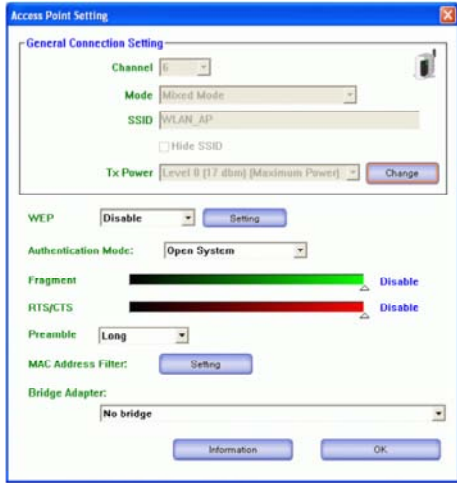|	
Fast Power-Saving Mode	When this mode is selected, the power mode will switch between CAM and Maximum Power-Saving Mode depending on the volume of throughput. The device driver checks the total bytes (only data frame) every 4 seconds to decide the power mode. If the total bytes sent exceed 10k bytes, 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".
Country Roaming	
World Mode	This function is only enabled and effective with 802.11d standard.
User Select	Enable this function to select the country you are now locating.
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. ***The RTS/CTS mechanism will be activated if the data size exceeds the value you set.*** 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.

2.7 Access Point

In access point mode, the **XPC 802.11b/g Wireless Kit** 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 **XPC 802.11b/g Wireless Kit.**

To use the **XPC 802.11b/g Wireless Kit** to bridge your wired and wireless network, the following requirements must be met :

1. The **XPC 802.11b/g Wireless Kit** 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 **XPC 802.11b/g Wireless Kit** is installed. Refer to **Configuring the Wireless Station Computer.**
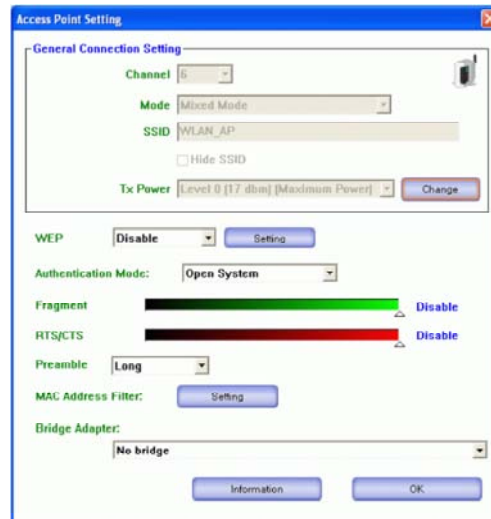
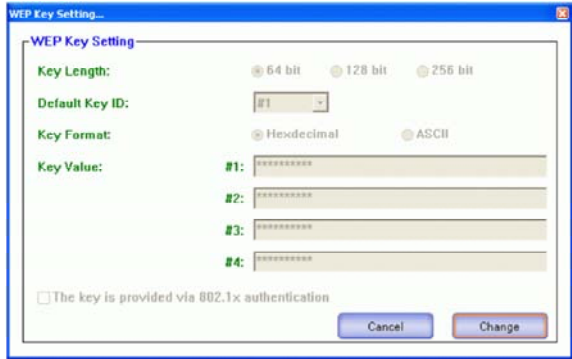Select the **Access Point** mode, and you will see the following figure.

Network Adapter	You can select the network adapter from the pull-down menu, it shows the device itself (the XPC 802.11b/g Wireless Kit) and also shows the devices supported by the XPC 802.11b/g Wireless Kit.
Connection Station List	Show the currently connected devices and IP addresses.
Channel	Shows the selected channel that is currently in use. (There are 14 channels available, depending on the country.)
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

Channel	Shows the selected channel that is currently in use. (There are 14 channels available, depending on the country.)
Mode	Select **Mixed Mode** or **802.11b only**, **802.11b/g only** standard Mode (If you choose this option the device will automatically convert the suitable standard).
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 p**ower from the pull-down menu, there** are four levels in cluding **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	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.
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. ***The RTS/CTS mechanism will be activate*d *if the data size exceeds the value you set.***

	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	Click *Setting* and you will see the following figure. You can select the Filter Type from the pull-down menu. **Disable :** Select to disable the filter function. **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. **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
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.

3. Appendix

3.1 SoftAP Configuration

Internet

**ADSL Router Built-in NAT, DHCP Server**
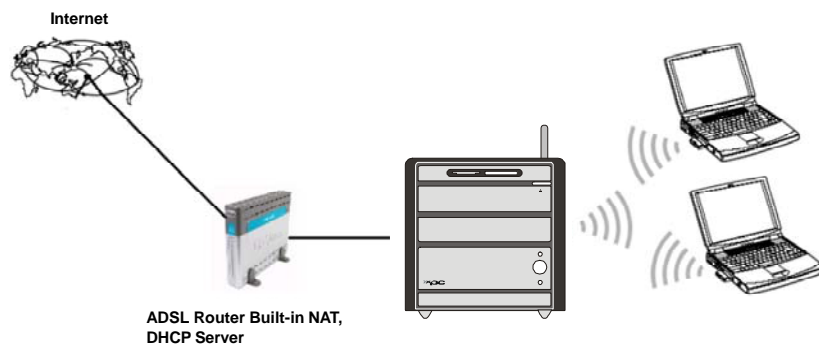
Setup Requirement :

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

1. Install the XPC 802.11b+g Wireless Kit 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 :
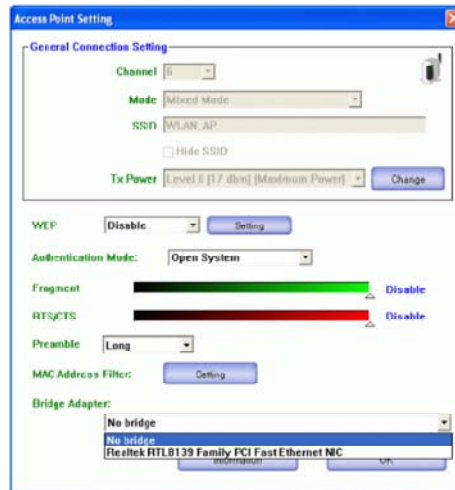
1. Select the Access Point mode, and you will see the following screen.
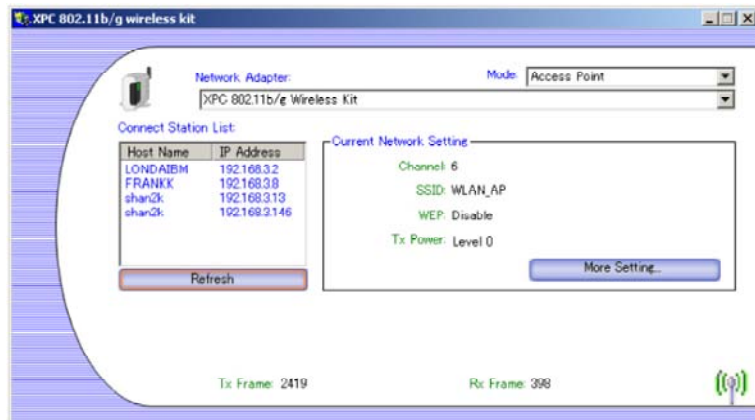
2. Click the **_More Setting..._** button and the following figure will appear for you to configure.
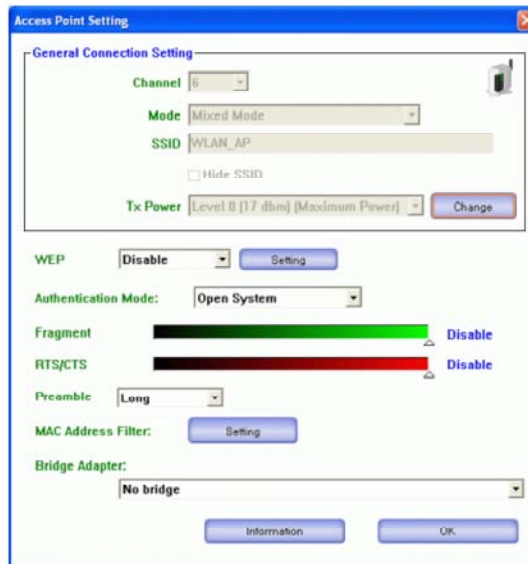
3. Select the wired Network Adapter that has already installed in the XPC from the pull-down menu.


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 net work does not have a DHCP server, you must assign a fixed IP to the wired XPC **(select Use the following IP address).**
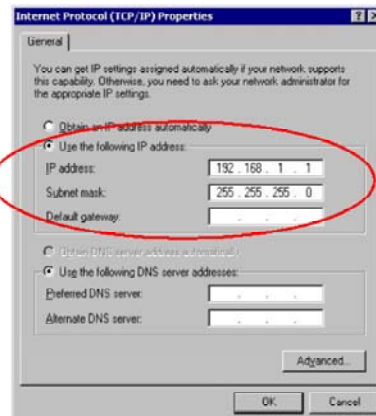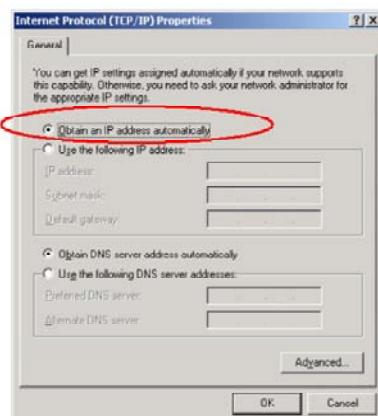
This example uses the network sharing feature in Windows 2000/XP to bridge the wired and wireless network when you set the XPC 802.11b+g Wireless Kit in access point (AP) mode

Setups may vary depending on your Windows version. **You may need to install additional software in Windows 98/ME.**
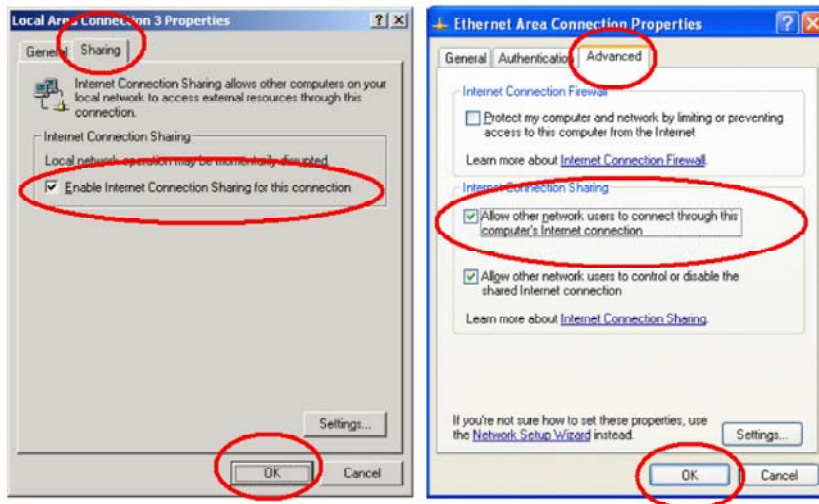
Step1 Go to **Start → Settings → Network and Dial-up Connections** (in Windows XP, go to **Start → Control Panel** and double-click **Network Connections**).
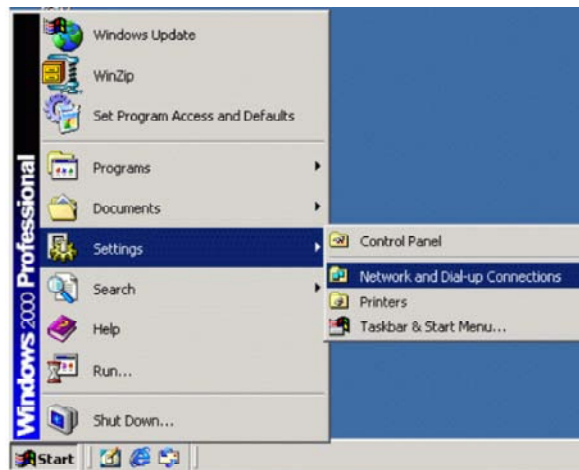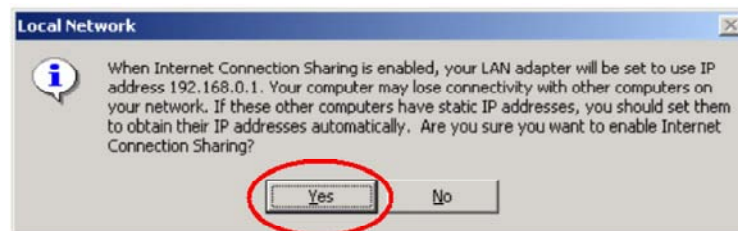

Step2 Right-click on the icon for your **Wired Ethernet Adapter** and click **Properties.**

Step3 Click the **Sharing** tab and select **Enable Internet Connection Sharing for this connection.** Click **OK.**

Step4 When the following screen appears, click **Yes.**

Configuring the Wireless Station Computer

Please refer to the **Network Connection** in the previous section to set up the wireless station computer(s) IP address.

3.2 Specifications

Product Name	XPC 802.11b/g Wireless Kit
Model Name	PN18
Host Interface	Standard USB2.0 Interface
Dimensions	74(W)x23(L)x7.4(H)mm
Weight	5g
Frequency Band	2.4~2.4835GHz(subject to local regulations)
Operating Voltage	5V
Current Consumption	Tx: 350mA/ Rx:250mA / Standby: 10mA
Spreading	OFDM(Orthogonal Frequency Division Multiplexing)
Data Rate	1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 9Mbps, 11Mbps, 12Mbps, 18Mbps, 24Mbps,36Mbps, 48Mbps, 54Mbps,
Transmit Power	11g: 13.5dBm / 11b: 16.5dBm
Receive Sensitivity	11Mbps @-82dBm Typical / 54Mbps @-70dBm Typical
Modulation	11 Ck(802.11b), BPSK, QPSK, 16-QAM, 64QAM(802.11b/g)
Security	64/128/256 bit WEP Encrytion, WPA Encryption
Antenna	HIROSE U.FL-R-SMT(10)
Supplied Driver	Windows 98SE/ME/2000/XP
Standards	IEEE 802.11b/g
Media Access protocol	CSMA/CA with ACK
Temperature Range	0~60°C(Operating), -20~70°C(storage)
Humidity	Max. 95% Non-condensing
Operating Range	Open Space: Up to 400m
Management Utility	Link Configuration for network join and diagnostics
EMC certification	FCC,CE, Japan RF
Warranty	1 year