

## What is WPA?

WPA, or Wi-Fi Protected Access, is a Wi-Fi standard that was designed to improve the security features of WEP (Wired Equivalent Privacy).

The 2 major improvements over WEP:

- Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard instead of TKIP.
- User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network.

WPA-PSK/WPA2-PSK uses a passphrase or key to authenticate your wireless connection. The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?\*&\_) and spaces. This key must be the exact same key entered on your wireless router or access point.

WPA/WPA2 incorporates user authentication through the Extensible Authentication Protocol (EAP). EAP is built on a more secure public key encryption system to ensure that only authorized network users can access the network.

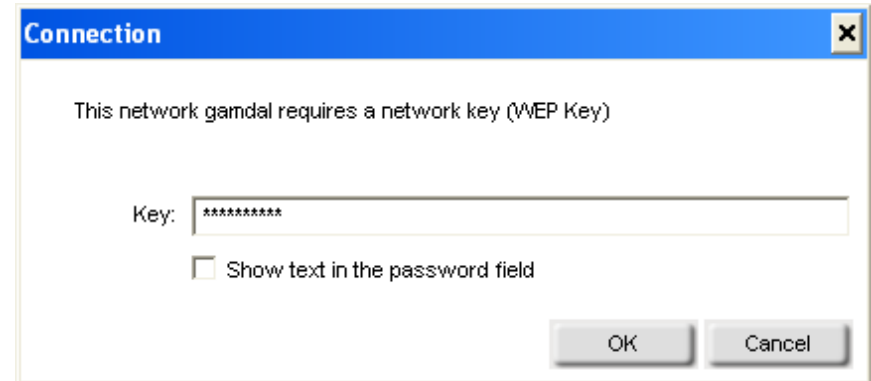
# Configure WEP

## Using the D-Link Wireless Connection Manager

It is recommended to enable WEP on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WEP key being used.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). From the list of available wireless networks, select the network you want to connect to and click **Connect**. If the network is using WEP, the screen (as shown to the left) will appear.

2. Enter the WEP key exactly as it is on your wireless router or access point.



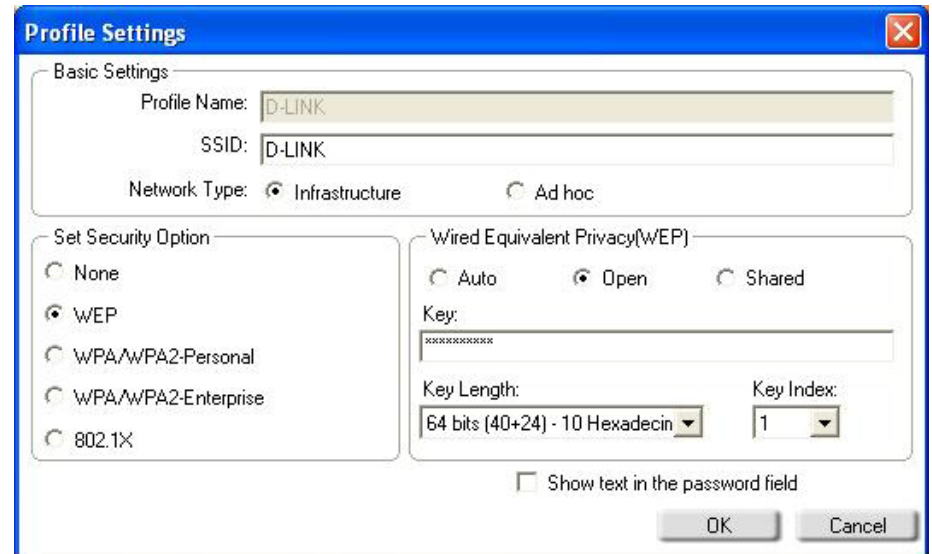
3. Click the **Show text in the password field** box to see the WEP key. Unchecking it will hide the key.

4. Click **OK** to connect to the network. Allow up to 30 seconds to connect.

If you would like to create a new network and enter the WEP settings, refer to the next page.

It is recommended to enable WEP on your wireless router or access point before configuring your wireless adapter. make sure you enter the WEP key exactly the same on all wireless devices. It is strongly recommended to set the authentication to **Shared Key**.

1. Open the Wireless Utility by double-clicking on the D-Link icon in your system tray (lower-right corner of screen). Click on **New** to create a new profile or highlight an existing profile and click **Modify**.
2. Select **WEP** under *Set Security Option*.
3. Select **Shared** and then select the *Key Length* from the drop-down menu.
4. Enter the WEP key exactly as it is on your wireless router or access point.
5. Click **OK** to connect to the network. Allow up to 30 seconds to connect.



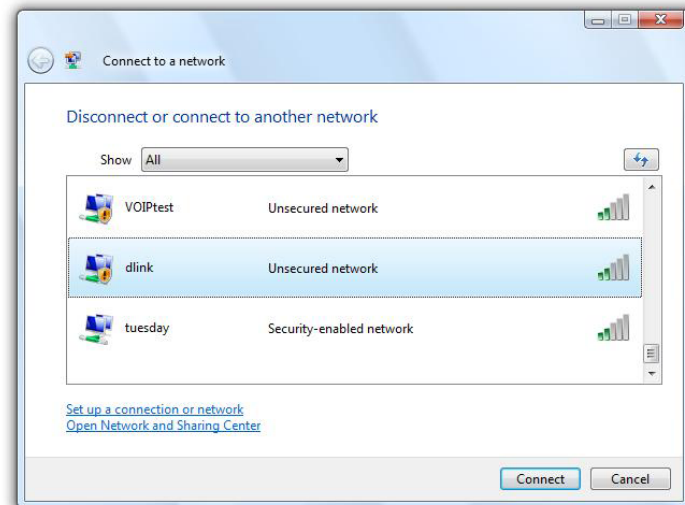
# Configure WEP Using Windows® Vista

It is recommended to enable wireless security (WEP) on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the security key or passphrase being used.

1. Open the Windows® Vista™ Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower right corner of screen). Select **Connect to a network**.

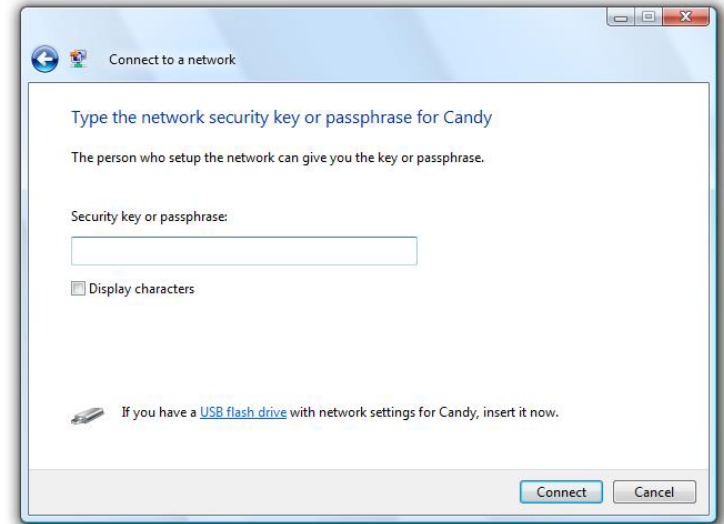


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. Enter the same security key or passphrase that is on your router and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the security settings are correct. The key or passphrase must be exactly the same as on the wireless router.

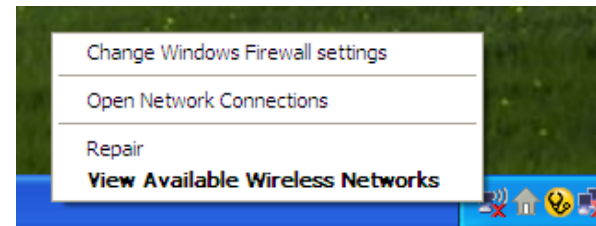


# Configure WEP

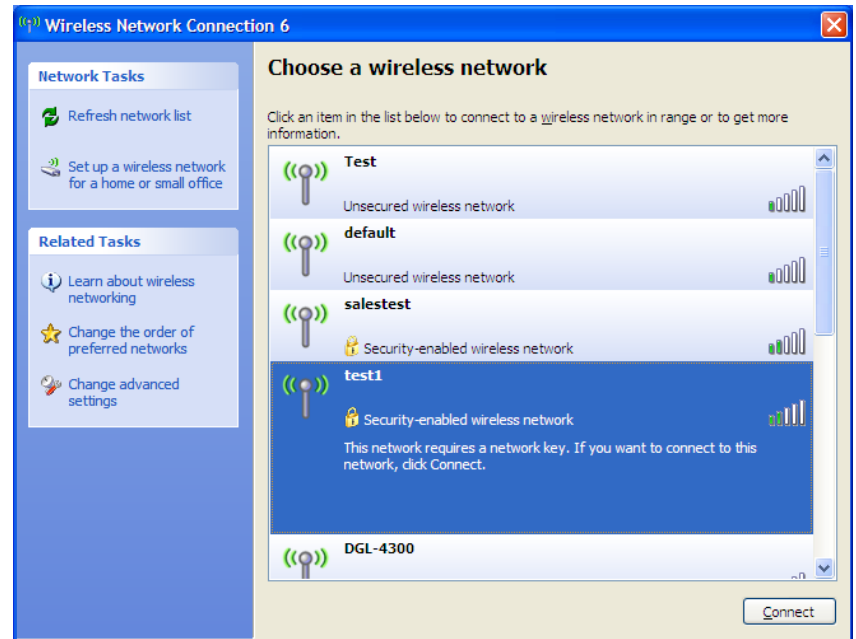
## Using the Windows® XP Utility

It is recommended to enable WEP on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WEP key being used.

1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.

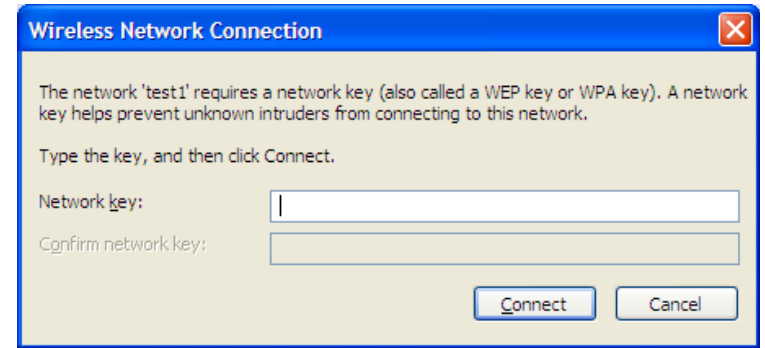


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



**3. The Wireless Network Connection box will appear. Enter the WEP key and click Connect.**

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WEP settings are correct. The WEP key must be exactly the same as on the wireless router or access point.



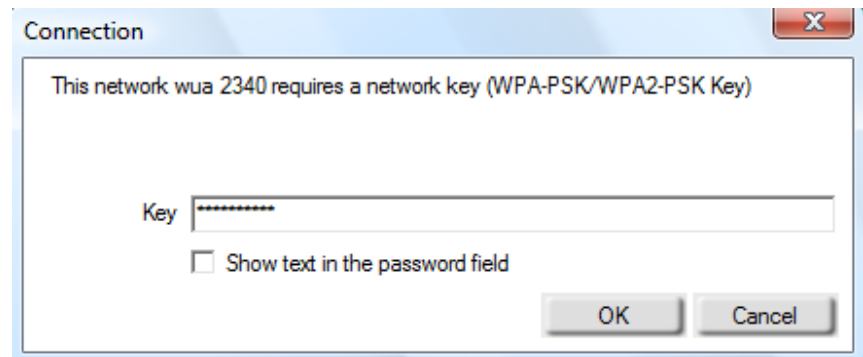
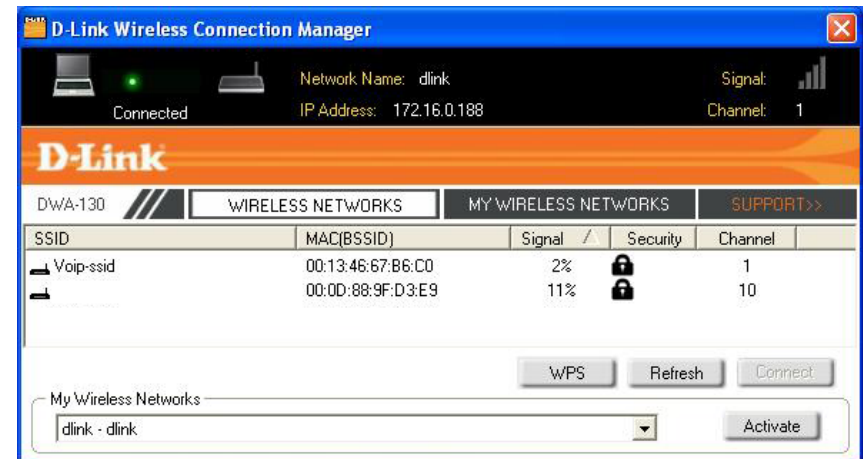
# Configure WPA/WPA2 Passphrase

## Using the D-Link Wireless Connection Manager

It is recommended to enable WPA-PSK on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WPA-PSK passphrase being used.

1. Open the Wireless Connection Manager by double-clicking on the D-Link icon on your desktop.
2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**. If the network is using WPA-PSK, the screen (as shown to the bottom-right) will appear.
3. Enter the WPA-PSK passphrase exactly as it is on your wireless router or access point. Click the **Show text in the password field** box to see the passphrase. Unchecking it will hide it.
4. Click **OK** to connect to the network. Allow up to 30 seconds to connect.

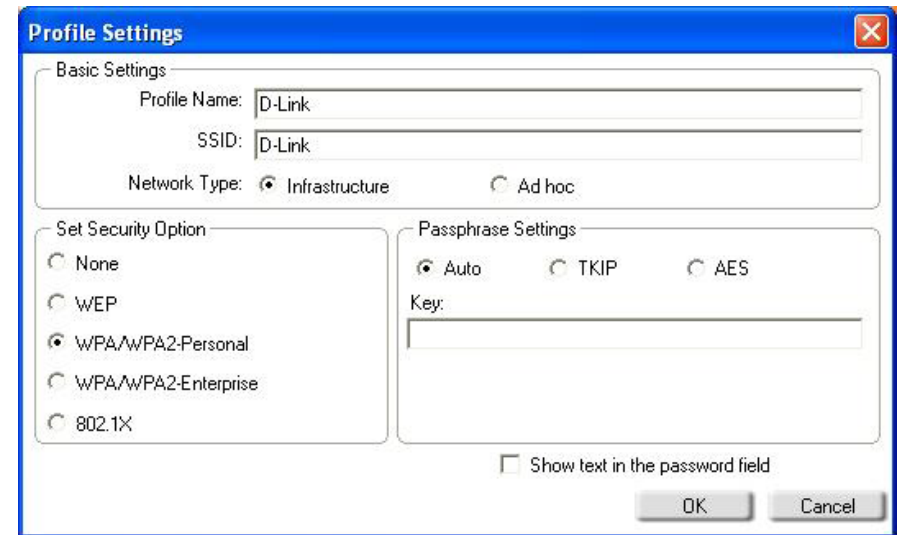
If you would like to create a new network and enter the WPA-PSK settings, refer to the next page.





It is recommended to enable WPA-PSK on your wireless router or access point before configuring your wireless adapter. Make sure you enter the passphrase exactly the same on all wireless devices.

1. Open the Wireless Connection Manager by double-clicking on the D-Link icon on your desktop. Click on **New** to create a new profile or highlight an existing profile and click **Modify**.
2. Select **WPA/WPA2-Personal** under *Set Security Option*.
3. Select **TKIP** or **AES**.
4. Enter the passphrase exactly as it is on your wireless router or access point.
5. Click **OK** to connect to the network. Allow up to 30 seconds to connect.



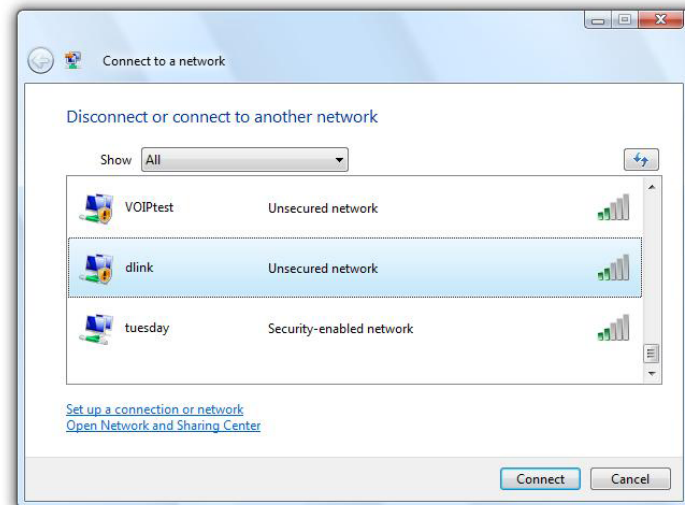
# Configure WPA/WPA2 Passphrase Using Windows® Vista

It is recommended to enable wireless security (WPA/WPA2) on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the security key or passphrase being used.

1. Open the Windows® Vista™ Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower right corner of screen). Select **Connect to a network**.

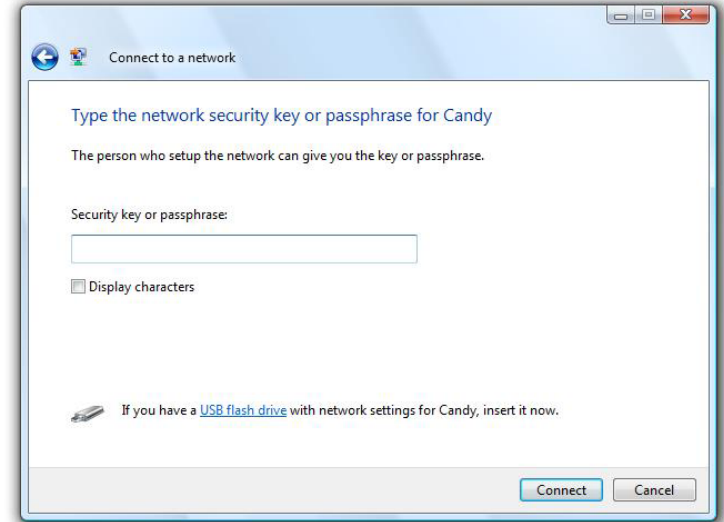


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. Enter the same security key or passphrase that is on your router and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the security settings are correct. The key or passphrase must be exactly the same as on the wireless router.

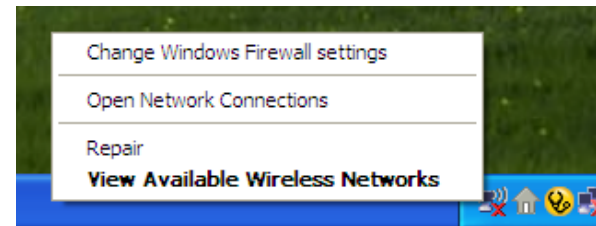


# Configure WPA/WPA2 Passphrase

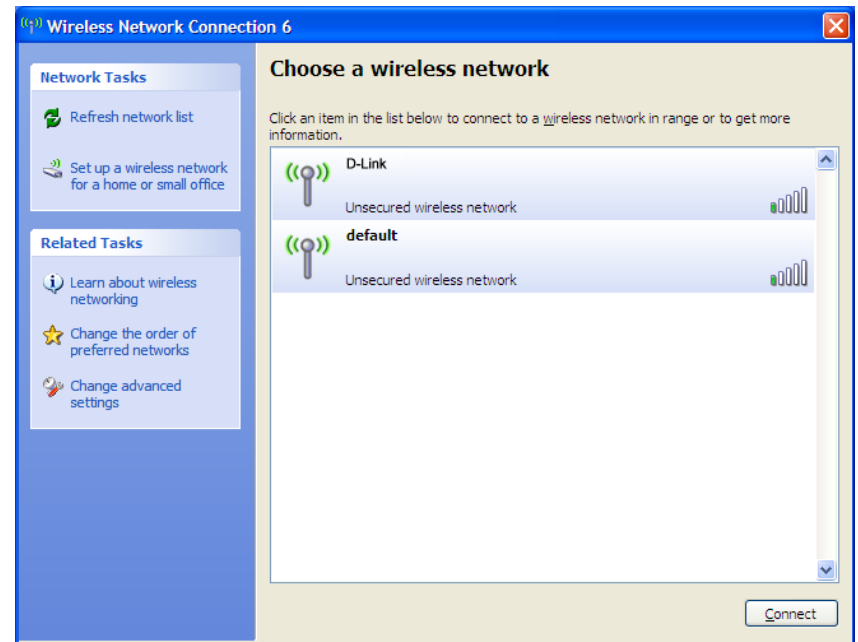
## Using the Windows® XP Utility

It is recommended to enable WPA-PSK on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WPA-PSK key being used.

1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.

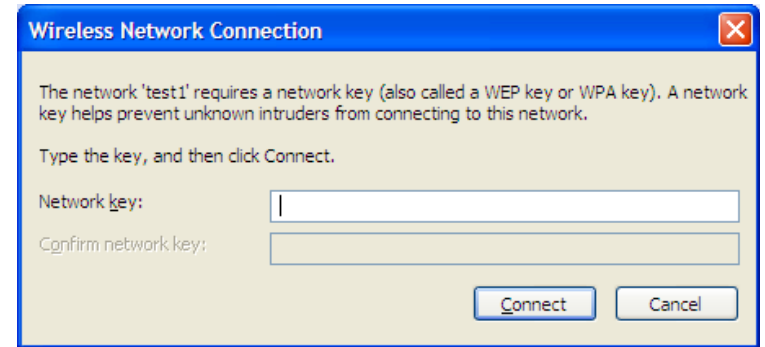


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. The **Wireless Network Connection** box will appear. Enter the WPA-PSK passphrase and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WPA-PSK settings are correct. The WPA-PSK passphrase must be exactly the same as on the wireless router or access point.

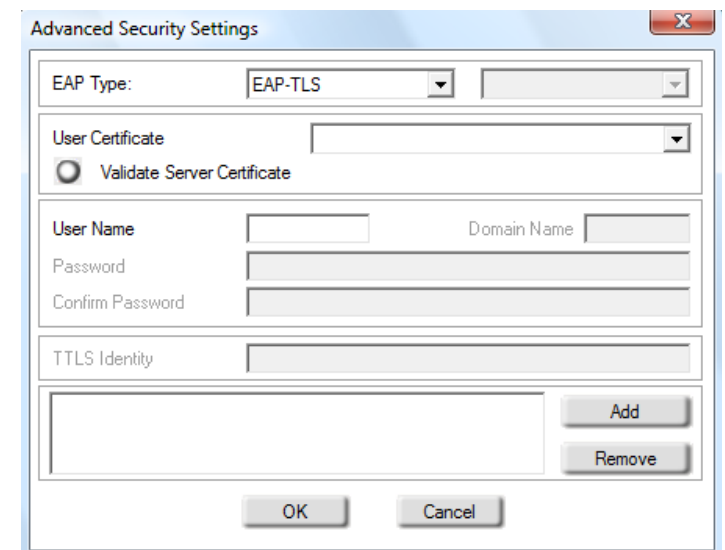
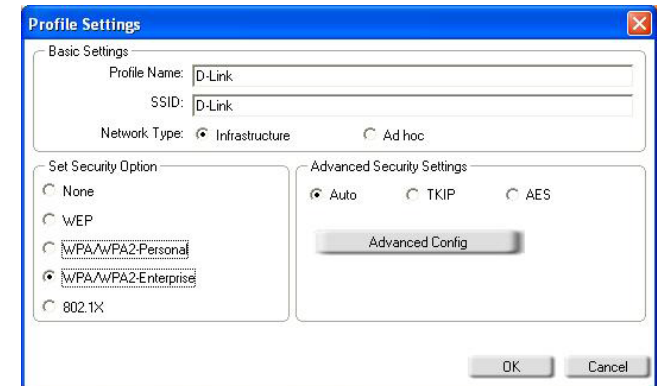


# Configure WPA/WPA2 (RADIUS)

## Using the D-Link Wireless Connection Manager

WPA and WPA2 are for advanced users who are familiar with using a RADIUS server and setting up certificates.

1. Open the Wireless Connection Manager by double-clicking on the D-Link icon on your desktop. Click on **New** to create a new profile or highlight an existing profile and click **Modify**.
2. Select **WPA/WPA2-Enterprise** under *Set Security Option* and then select **TKIP** or **AES**.
3. Click on **Advanced Config** to continue.
4. Next to *EAP Type*, select **EAP-TLS**, **EAP-TTLS**, or **PEAP**. Extensible Authentication Protocols allow devices on the network to request authentication from the RADIUS server in the network. All the devices on the network must use the same EAP type when using a RADIUS server for authentication. Some RADIUS servers require that the Validate Server field be selected. Check this field if your RADIUS server requires validation.
5. Select an **User Certificate** from the drop-down menu.
6. Enter the login information required to authenticate.
7. Click **Add** to enter the IP address(es) of your RADIUS servers.
8. Click **OK** to save your settings.

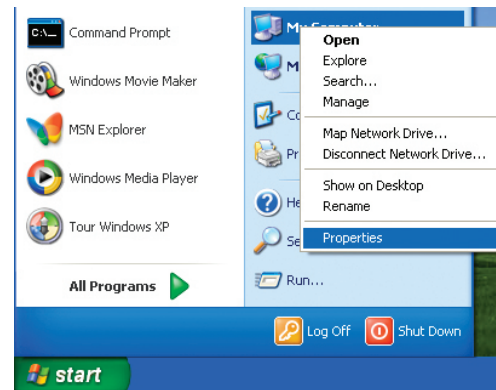


# Troubleshooting

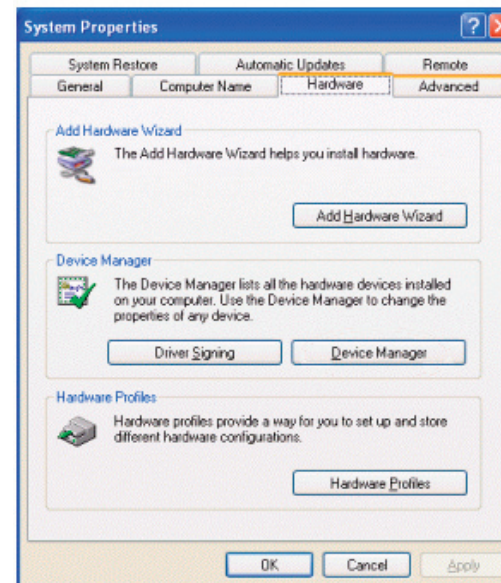
This chapter provides solutions to problems that can occur during the installation and operation of the DWA-130. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows® XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.)

## 1. How do I know if my adapter is installed properly?

Go to **Start > My Computer > Properties.**



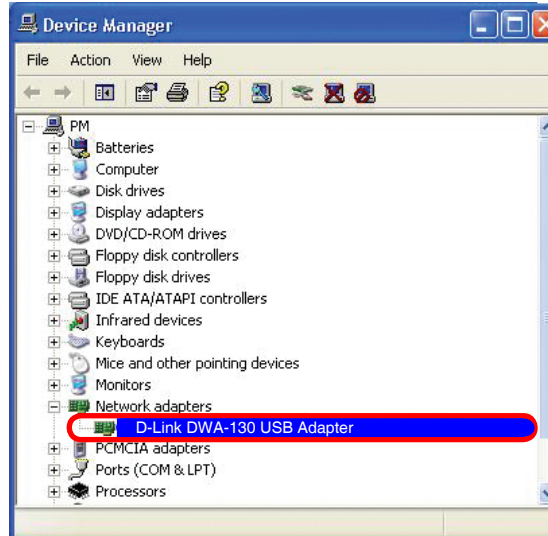
Select the **Hardware Tab.**



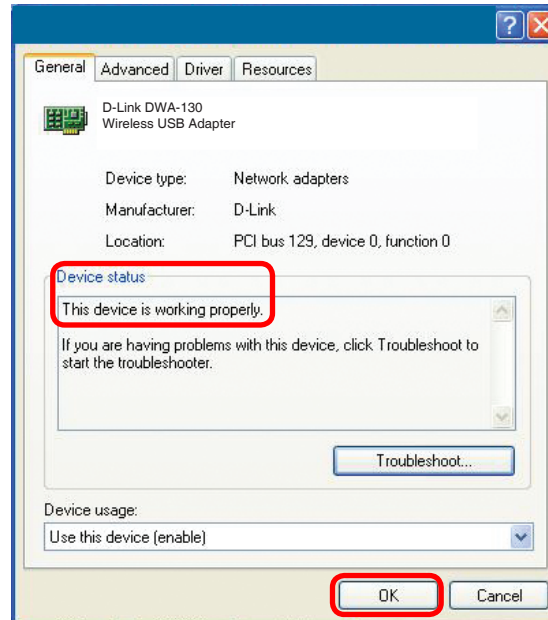
Click the + sign next to **Network Adapters**.

Right-click on **D-Link DWA-130 USB Adapter**.

Select **Properties** to check that the drivers are installed properly.



Look under **Device Status** to check that the device is working properly. Click **OK** to continue.





## 2. The computer does not recognize the DWA-130 Wireless USB Adapter.

Make sure that the DWA-130 Wireless USB Adapter is properly seated in the computer's USB port.

If Windows does not detect the hardware upon insertion of the adapter, make sure to completely remove drivers that were previously loaded.

## 3. The computer with the DWA-130 installed is unable to connect to the wireless network and/or the Internet.

- Check that the LED indicators for the broadband modem are indicating normal activity. If not, there may be a problem with the broadband connection.
- Check that the LED indicators on the wireless router are functioning properly. If not, check that the AC power and Ethernet cables are firmly connected.
- Check that the IP Address, subnet mask, gateway, and DNS settings are correctly entered for the network
- In **Infrastructure** mode, make sure the same **Service Set Identifier (SSID)** is specified on the settings for the wireless clients and access points. The **SSID** factory default setting for D-Link products is **default**. (Double-click on the WLAN icon in the taskbar. The **Link Info** screen will display the SSID setting.)

Check that the **Network Connection** for the wireless client is configured properly. Select **AP (Infrastructure)** when connecting to an access point. Double-click on the **WLAN icon** in the taskbar > click on **Configuration** to change the settings for the wireless adapter.

If **Security** is enabled, make sure that the correct encryption keys are entered on both the DWA-130 and the access point. Double-click on the **WLAN icon** in the taskbar > click **Encryption**. Check to see that the key selected is set to the same key as other devices on the network.

# Wireless Basics

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. Strictly adhering to the IEEE standard, the D-Link wireless family of products will allow you to securely access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems support the same protocols as Ethernet adapter cards.

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Router is a device used to provide this link.

## **What is Wireless?**

Wireless or Wi-Fi technology is another way of connecting your computer to the network without using wires. Wi-Fi uses radio frequency to connect wirelessly, so you have the freedom to connect computers anywhere in your home or office network.

## **Why D-Link Wireless?**

D-Link is the worldwide leader and award winning designer, developer, and manufacturer of networking products. D-Link delivers the performance you need at a price you can afford. D-Link has all the products you need to build your network.

## **How does wireless work?**

Wireless works similar to how cordless phone work, through radio signals to transmit data from one point A to point B. But wireless technology has restrictions as to how you can access the network. You must be within the wireless network range area to be able to connect your computer. There are two different types of wireless networks Wireless Local Area Network (WLAN), and Wireless Personal Area Network (WPAN).

### **Wireless Local Area Network (WLAN)**

In a wireless local area network, a device called an Access Point (AP) connects computers to the network. The access point has a small antenna attached to it, which allows it to transmit data back and forth over radio signals. With an indoor access point as seen in the picture, the signal can travel up to 300 feet. With an outdoor access point the signal can reach out up to 30 miles to serve places like manufacturing plants, industrial locations, college and high school campuses, airports, golf courses, and many other

outdoor venues.

## **Wireless Personal Area Network (WPAN)**

Bluetooth is the industry standard wireless technology used for WPAN. Bluetooth devices in WPAN operate in a range up to 30 feet away.

Compared to WLAN the speed and wireless operation range are both less than WLAN, but in return it doesn't use nearly as much power which makes it ideal for personal devices, such as mobile phones, PDAs, headphones, laptops, speakers, and other devices that operate on batteries.

## **Who uses wireless?**

Wireless technology has become so popular in recent years that almost everyone is using it, whether it's for home, office, business, D-Link has a wireless solution for it.

### **Home**

- Gives everyone at home broadband access
- Surf the web, check email, instant message, and etc
- Gets rid of the cables around the house
- Simple and easy to use

### **Small Office and Home Office**

- Stay on top of everything at home as you would at office
- Remotely access your office network from home
- Share Internet connection and printer with multiple computers
- No need to dedicate office space

## **Where is wireless used?**

Wireless technology is expanding everywhere not just at home or office. People like the freedom of mobility and it's becoming so popular that more and more public facilities now provide wireless access to attract people. The wireless connection in public places is usually called "hotspots".

Using a D-Link USB Adapter with your laptop, you can access the hotspot to connect to Internet from remote locations like: Airports, Hotels, Coffee Shops, Libraries, Restaurants, and Convention Centers.

Wireless network is easy to setup, but if you're installing it for the first time it could be quite a task not knowing where to start. That's why we've put together a few setup steps and tips to help you through the process of setting up a wireless network.

## **Tips**

Here are a few things to keep in mind, when you install a wireless network.

### **Centralize your router or Access Point**

Make sure you place the router/access point in a centralized location within your network for the best performance. Try to place the router/access point as high as possible in the room, so the signal gets dispersed throughout your home. If you have a two-story home, you may need a repeater to boost the signal to extend the range.

### **Eliminate Interference**

Place home appliances such as cordless telephones, microwaves, and televisions as far away as possible from the router/access point. This would significantly reduce any interference that the appliances might cause since they operate on same frequency.

## Security

Don't let you next-door neighbors or intruders connect to your wireless network. Secure your wireless network by turning on the WPA or WEP security feature on the router. Refer to product manual for detail information on how to set it up.

# Wireless Modes

There are basically two modes of networking:

- **Infrastructure** – All wireless clients will connect to an access point or wireless router.
- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer. Unfortunately 802.11g/n products such as the DWA-130 do not support ad-hoc mode.

An Infrastructure network contains an Access Point or wireless router. All the wireless devices, or clients, will connect to the wireless router or access point.

An Ad-Hoc\* network contains only clients, such as laptops with wireless USB Adapters. All the adapters must be in Ad-Hoc mode to communicate.

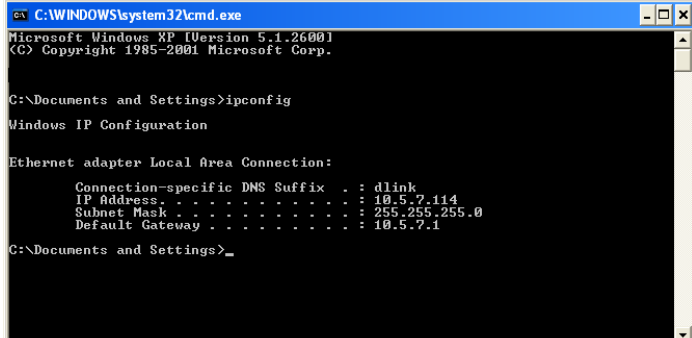
# Networking Basics

## Check your IP address

After you install your new D-Link wireless adapter and have established a wireless connection, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. router) automatically. To verify your IP address, please follow the steps below.

### Windows® XP/2000 Users

- Click on **Start > Run**. In the run box type *cmd* and click **OK**.
- At the prompt, type *ipconfig* and press **Enter**.
- This will display the IP address, subnet mask, and the default gateway of your adapter.



```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings>ipconfig

Windows IP Configuration

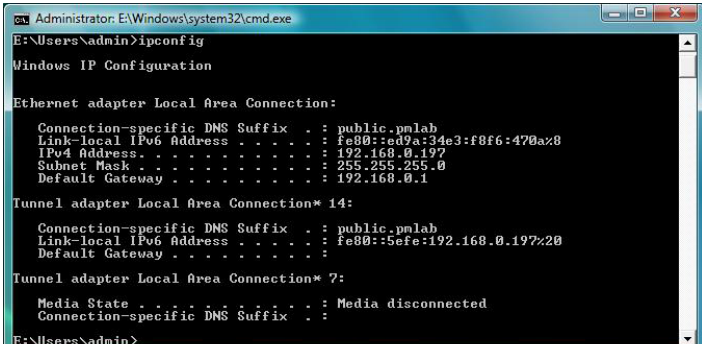
Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : dlink
    IP Address . . . . . : 10.5.7.114
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.5.7.1

C:\Documents and Settings>_
  
```

### Windows Vista™ Users

- Click **Start > All Programs > Accessories > Command Prompt**. You may need administrative access to run this application.
- For all additional prompt windows inquiring of running the command prompt application, select **Yes, OK, or Continue**.
- At the prompt, type *ipconfig* and press **Enter**.
- This will display the IP address, subnet mask, and default gateway of your adapter.



```

Administrator: E:\Windows\system32\cmd.exe
E:\Users\admin>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : public.pmlab
    Link-local IPv6 Address . . . . . : fe80::ed9a:34e3:f8f6:470a%8
    IPv4 Address. . . . . : 192.168.0.197
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.0.1

Tunnel adapter Local Area Connection* 14:

    Connection-specific DNS Suffix  . : public.pmlab
    Link-local IPv6 Address . . . . . : fe80::5efe:192.168.0.197%20
    Default Gateway . . . . . :

Tunnel adapter Local Area Connection* 7:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

E:\Users\admin>
  
```

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your router. Some firewall software programs may block a DHCP request on newly installed adapters.



# Statically Assign an IP address

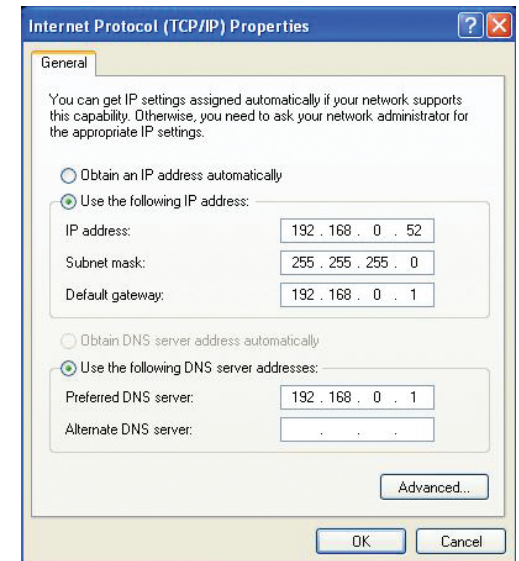
If you are not using a DHCP capable gateway/router, or you need to assign a static IP address, please follow the steps below:

## Windows® XP/2000 Users

- **Windows® XP** - Click on **Start > Control Panel**. Make sure you are in Classic View. Double-click on the Network Connections icon.  
**Windows® 2000** – From the desktop, right-click **My Network Places > Properties**.
- Right-click on the **Local Area Connection** which represents your D-Link wireless network adapter (or other adapter) which will be connected to your router.
- Highlight **Internet Protocol (TCP/IP)** and click **Properties**.
- Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or LAN IP address on your router.

**Example:** If the router's LAN IP address is 192.168.0.1, make your IP address 192.168.0.X where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network.

- Set **Default Gateway** the same as the LAN IP address of your router or gateway.
- Set **Primary DNS** the same as the LAN IP address of your router or gateway.
- The **Secondary DNS** is optional (you may enter a DNS server from your ISP).
- Click **OK** to save your settings.

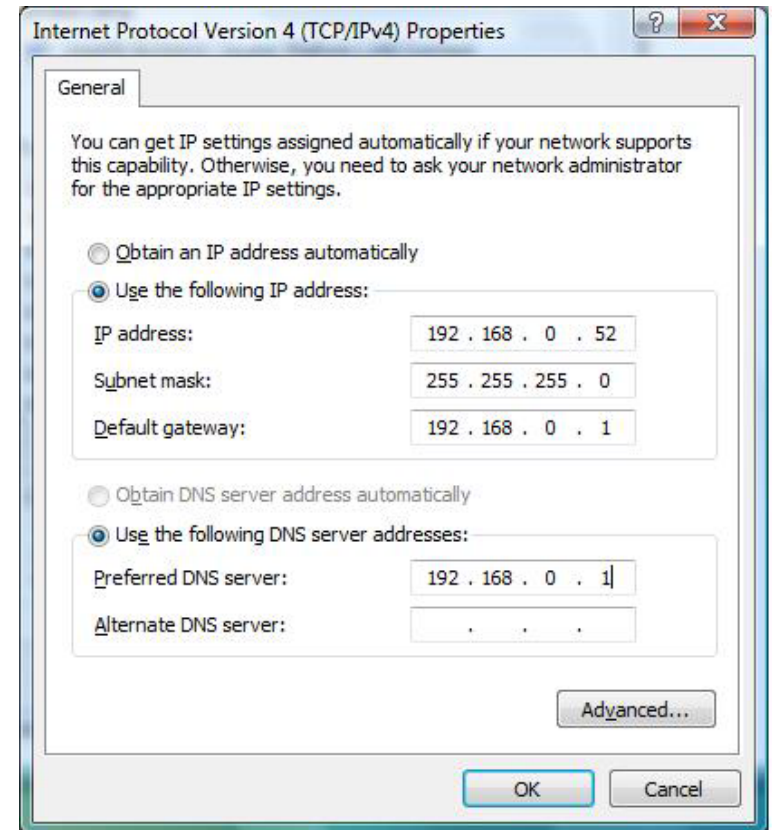


## Windows Vista™ Users

- Click on **Start > Control Panel**. Make sure you are in Classic View. Double-click on the **Network and Sharing Center** icon. Along the left panel in the window, click on **Manage network connections**.
- Right-click on the **Local Area Connection** which represents your D-Link wireless network adapter which will be connected to your network.
- Highlight **Internet Protocol Version 4 (TCP /IPv4)** and click **Properties**.
- Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or LAN IP address on your router or network.

**Example:** If the router's LAN IP address is 192.168.0.1, make your IP address 192.168.0.X where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network.

- Set **Default Gateway** the same as the LAN IP address of your router or gateway.
- Set **Primary DNS** the same as the LAN IP address of your router or gateway.
- The **Secondary DNS** is optional (you may enter a DNS server from your ISP).
- Click **OK** to save your settings.



# Technical Specifications

## Standards

- IEEE 802.11n (draft 2.0)
- IEEE 802.11g
- IEEE 802.11b

## Bus Type

- USB 2.0 (1.1 compatible)

## Security

- WPA/WPA2 - Wi-Fi Protected Access (TKIP, MIC, IV Expansion, Shared Key Authentication)
- 802.1x
- WPS (PIN and PBC)
- WEP

## Media Access Control

- CSMA/CA with ACK

## Frequency Range

- 2.4GHz to 2.462GHz

## Power Consumption (802.11n)

- Tx: 460 mA
- Rx: 240 mA

## Modulation Technology

- Orthogonal Frequency

## Division Multiplexing (OFDM)

- Complementary Code Keying (CCK)

## Transmitter Power Output

- 14 dBm (802.11g/n)

## Operating Voltage

- 5 VDC +/- 10%

## Operating Temperature

- 32°F to 104°F ( 0°C to 40°C)

## Operating Humidity

- 10% to 90% maximum (non-condensing)

## Dimensions

- 1.1" x 3.4" x 0.5"

## Weight

- 0.06 lbs (27.22g)

\* Maximum wireless signal rate derived from IEEE Standard 802.11n-draft and 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Environmental factors will adversely affect wireless signal range.

Version 1.0  
July 24, 2008

### **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.

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

### **IMPORTANT NOTE:**

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

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

SAR compliance has been established in typical laptop computer(s) with USB slot, and product could be used in typical laptop computer with USB slot. Other application like handheld PC or similar device has not been verified and may not compliance with related RF exposure rule and such use shall be prohibited.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

### **Industry Canada Statement**

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

### **IMPORTANT NOTE:**

#### **IC Radiation Exposure Statement:**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with IC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

### **以下警語適用台灣地區:**

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。