LevelOne

WNC-0305USB

11g Wireless USB Adapter

User Manual

V1.0.0-0612

Table of Contents

Chapter 1

Introduction

This Chapter provides an overview of the Wireless Adapter's features and capabilities.

Congratulations on the purchase of your new Wireless USB Adapter. The Wireless USB Adapter provides a wireless network interface for your Notebook or Desktop PC.

LED

USB Wireless Adapter

The Wireless USB Adapter has a single Link/Activity LED.

Link/Act LED	• On – Associated with the network.
	• Off - Not associated with the network.
	• Blinking - Data being transferred.

Operation

You should install the supplied software on the CD-ROM before inserting the USB adapter.

Chapter 2
Initial Installation

This Chapter covers the software installation of the Wireless USB Adapter.

Requirements

- Windows 2000 or XP.
- Available USB port.
- CD-ROM drive.
- IEEE802.11b or IEEE802.11g wireless LAN.

Procedure

You should install the supplied software BEFORE inserting the USB Adapter.

1. Insert the setup CD into the CD-ROM drive on your PC/Notebook.
2. The autorun program should start automatically. If it does not, run the SETUP.EXE program.
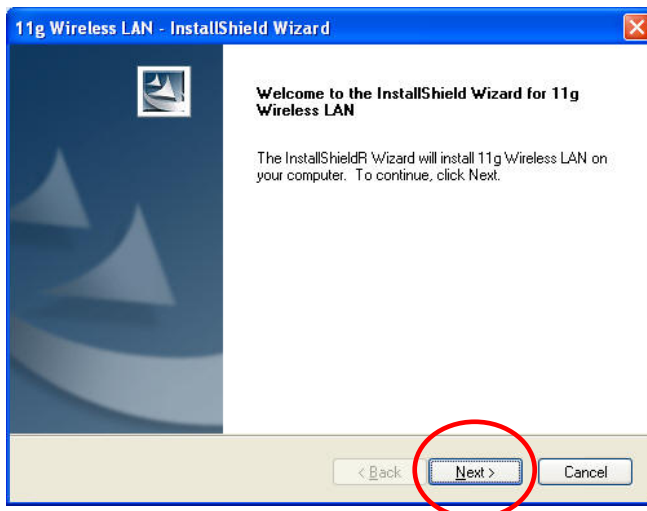3. Select the desired installation language on the screen.

Figure 1: Start Installation

4. On the screen above, click "Next" to start the installation.
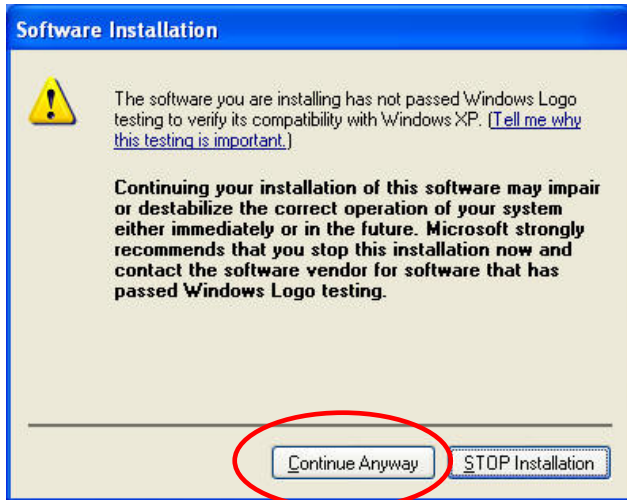5. Step though the procedure until you see the screen below.

Figure 2: Installation Screen

6. Click "Continue Anyway" on the screen above.

Figure 3: Information

7. Insert the USB Adapter into your PC when above screen appears
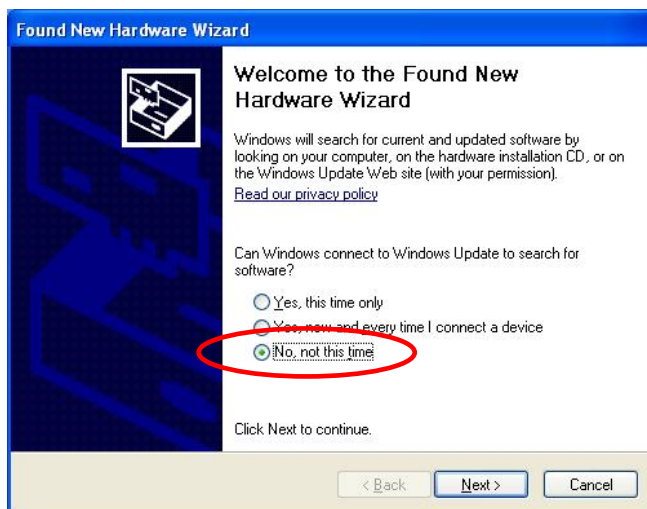

Figure 4: Installation Screen

8. The Windows "New Hardware" wizard will then start.

- Select *No, not this time* then click "Next"
- Select *Install the software automatically* to allow it to complete the installation of the Windows driver
- If using Windows XP, you may see a warning screen like the example below. If you do see this screen, just click "Continue Anyway"
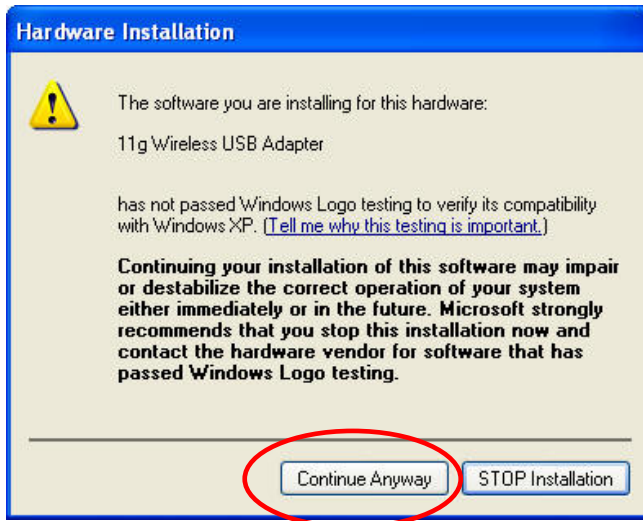

Figure 4: Windows XP Warning

9. When the Windows wizard is complete, you will now have a new icon in your system tray, as shown below.

Figure 5: System Tray Icon

10. You can double-click this icon to configure the Wireless interface. See the following chapter for details.

Chapter 3

Using the Windows Utility

This Chapter provides Setup details for the AP mode of the Wireless Adapter.

Overview

If using Windows, you can use the supplied utility to configure the Wireless interface.

To Use the supplied Windows utility for Configuration

- Right-click the System Tray icon
- From the pop-up menu, select "Restore".

This Chapter assumes you are using the supplied 11g Wireless LAN utility.

System Tray Icon

If the program is running, you can double-click the icon in the System Tray to open the application.

If the program is not running, you can start it using the option in the Start menu created by the installation.

For the USB Adapter, this will be *Start - Programs - LevelOne - 11g Wireless LAN Utility*

Status Information

The menu options available from the System Tray icon are:

- **Restore** - This will display the main screen.
- **Radio Off** - The wireless adapter is not associated with the network when the radio is off.
- **Exit** - Terminate the connection to the Wireless Adapter.

Figure 6: Wireless Adapter menu

Connecting to a Wireless Network

Double-click the icon to open the Site Survey screen, when you can select the Wireless network you wish to join.

Auto Connect

Normally, this option should be enabled. The adapter will then connect to an available network which was connected successfully last time.

There are various methods to specify the required network.

* On the Profile Manager tab, select the desired profile in the list, and click the Apply Profile button.

* On the Site Survey tab, either double-clicks the network in the list, or selects the network and click the Connect button.

*

Site Survey Screen

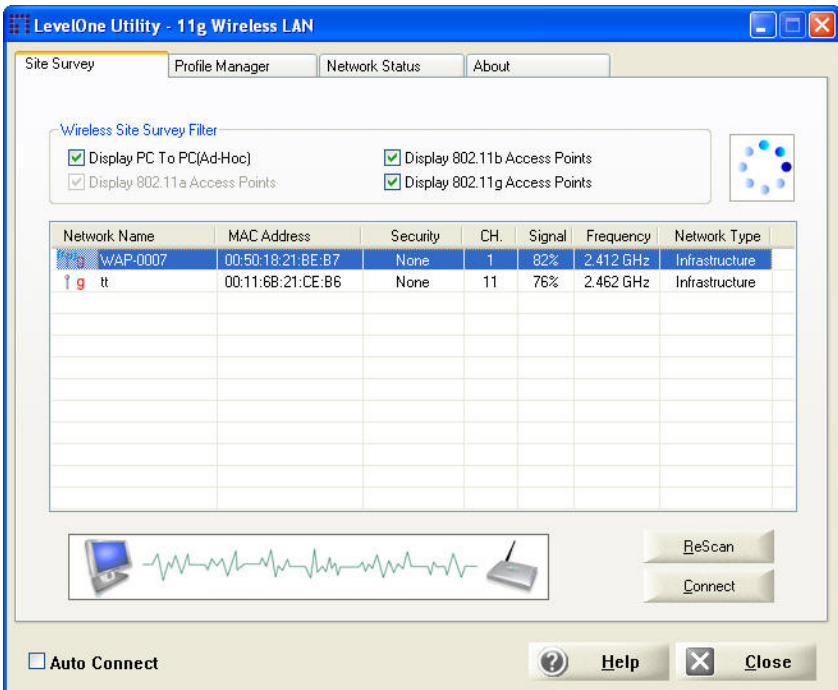This screen is displayed when you double-click the system tray icon. You can also click the Site Survey Tab in the screen.

Figure 7: Site Survey Screen

Data - Site Survey Screen

Display PC To PC (Ad-Hoc)	Select this check box to display ad-hoc (computer-to-computer) networks.
Display 802.11b Access Points	Select this check box to display 802.11b (infrastructure) networks.
Display 802.11g Access Points	Select this check box to display 802.11g (infrastructure) networks.
Network Name	Available wireless networks are listed.
MAC Address	This is the MAC address of the Access Point (or Wireless station, if the network is an Ad-hoc network).
Security	Data encryption and authentication methods used on the wireless network
CH.	The channel used by the Wireless network.
Signal	This is displayed as percentage (0 ~ 100%).
Frequency	The Wireless band used by this Wireless network.
Network Type	This will indicate "Infrastructure" (displayed device is an Access Point) or "Ad-hoc". (displayed device is a Wireless station)
Status	The area to the left of the "Rescan" button shows the current status. In the example above, it shows "Connected".
Rescan	Click this button to rescan for all Wireless networks.

Wireless Network Sequence (order)

You can click the headings (ex. Network Name, MAC Address, Security…) of the Wireless network table to arrange the Wireless network in the desired order.

To Connect to an Open Wireless Network

- Double-click on the desired network. or
- Click the name of the wireless network to which you want to connect, and then click **Connect**.

Note that once you are connected to a Wireless network, the **Site Survey** screen will identify the current wireless network with a blue icon, as shown below.
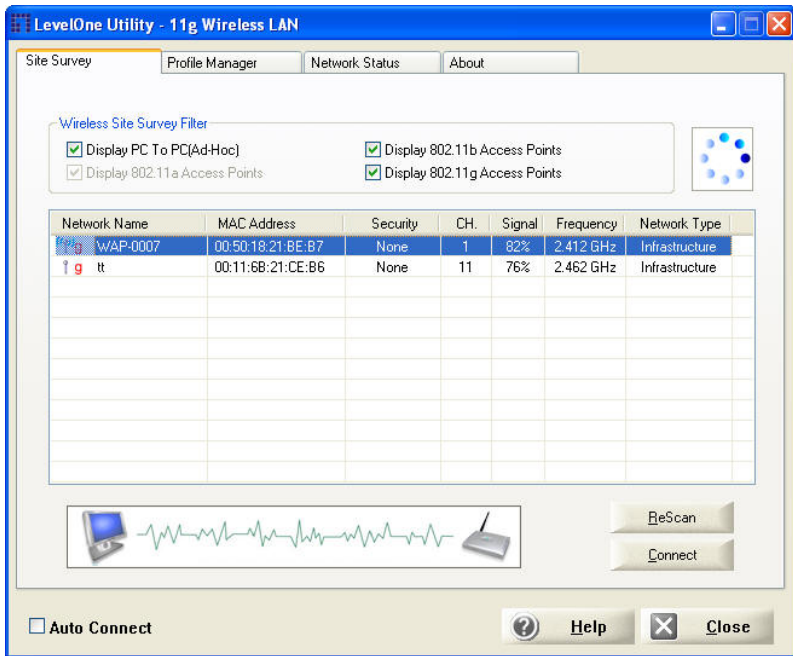
Figure 8: Site Survey Screen – Connected

To Connect to a Wireless Network with Encryption

- Double-click on the desired network. or
- Click the name of the wireless network to which you want to connect, and then click **Connect**.
- The **Profile Manager** screen will identify the current wireless network encryption. Please see next section for more detail

Profile Manager Screen

This screen is accessed by clicking the *Profile Manager* tab on the main screen.
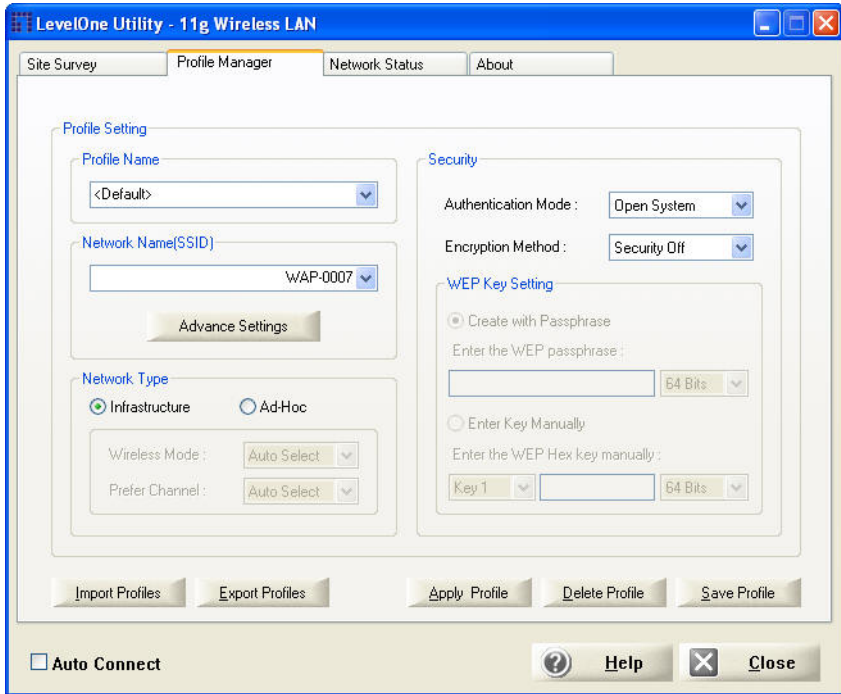
Figure 10: Profile Manager Screen

Data - Profile Manager Screen

Profile Name	Enter or select a suitable name for this profile. Each profile must have a unique name.
Network Name (SSID)	If the desired wireless network is currently available, you can select its SSID. Otherwise, type in the SSID of the desired wireless network.
Advanced Settings	On the resulting sub-screen, enter the required data for the advanced settings.
Network Type	Select the desired option: • **Infrastructure** - Select this to connect to an Access point. • **Ad-Hoc** - Select this if you are connecting directly to another computer.

Wireless Mode	Select the desired wireless mode to which you want to connect. This option only available under **Ad-Hoc** mode, it allows user to select the prefer channel.
Prefer Channel	Select the channel you would like to use under **Ad-Hoc** mode. Channel 1 ~ 13.
Authentication Mode	You MUST select the option to match the Wireless LAN you wish to join. The available options are: • **Open System** - Broadcast signals are not encrypted. This method can be used only with no encryption or with WEP. • **Shared Key** - Broadcast signals are encrypted using WEP. This method can only be used with WEP. • **Auto Switch** - This is another WEP system; it will select either Open System or Shared Key as required. • **WPA-PSK** - PSK means "Pre-shared Key". You must enter this Passphrase value; it is used for both authentication and encryption. Please refer to **Passphrase** section for more detail. • **WPA2-PSK** - This is a further development of WPA-PSK, and offers even greater security. You must enter this Passphrase value; it is used for both authentication and encryption. Please refer to **Passphrase** section for more detail. • **WPA-Radius** - This version of WPA requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA standard. • **WPA2-Radius** - This version of WPA2 requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA2 standard.

Encryption Method	The available options depend on the Authentication method selected above. The possible options are: **Security Off** - No data encryption is used. **WEP** - If selected, you must enter the WEP data shown below. This WEP data must match the Access Point or other Wireless stations. **AES, TKIP** - These options are available with WPA-PSK, WPA2-PSK, Select the correct option.
Create with Passphrase	Enable this check box and enter a word or group of printable characters in the Passphrase box, select the desired encryption to automatically configure the WEP Key.
Enter Key Manually	Enable this check box and select the desired key in the drop-down list. Then enter the key values you wish to use and select the desired encryption. Other stations must have matching key values. *Support WEP Hex Key only.
Passphrase	For WPA-PSK and WPA2-PSK modes, you need to enter the desired value (8~63 characters). Data is encrypted using a 256Bit key derived from this key. Other Wireless Stations must use the same key.
Confirm	For WPA-PSK and WPA2-PSK modes, re-enter the value in this field.
802.1x Authentication Protocol	For WPA Radius and WPA2 Radius modes, select the desired option in the drop-down list. The options are EAP/TLS, Protected EAP(PEAP), Light EAP(LEAP)
Configure WPA Radius	For WPA Radius and WPA2 Radius modes, click this button to open a sub-window where you can enter details of the Radius Server.

To add a profile

1. On the Profile Manager tab, complete the settings on this screen.
2. Verify that the settings you configured are correct.
3. Click Save Profile.
4. Then click Apply Profile to connect the wireless network.

To delete a profile

1. On the Profile Manager tab, select the profile that you want to delete.
2. Click Delete Profile.

To edit a profile

1. On the Profile Manager tab, select the profile that you want to edit.
2. Change the profile settings as necessary.
3. Click Save Profile.

To enable a profile

1. In the list of available profiles, click the profile that you want to enable.
2. Click Apply Profile.

To export profiles

1. On the Profile Manager tab, click Export Profiles. The Save As dialog box appears.
2. Type a name for the profile that you are saving, and then verify that the file name extension is set to .cfg.
3. Click Save.

To import profiles

1. On the Profile Manager tab, click Import Profiles. The open dialog box appears.
2. Select the profile set that you want to import.
3. Click Open.

Advanced Settings Screen

Once you have created a profile, as described above, the **Advanced Settings** tab will be available on the Profile Manager screen.
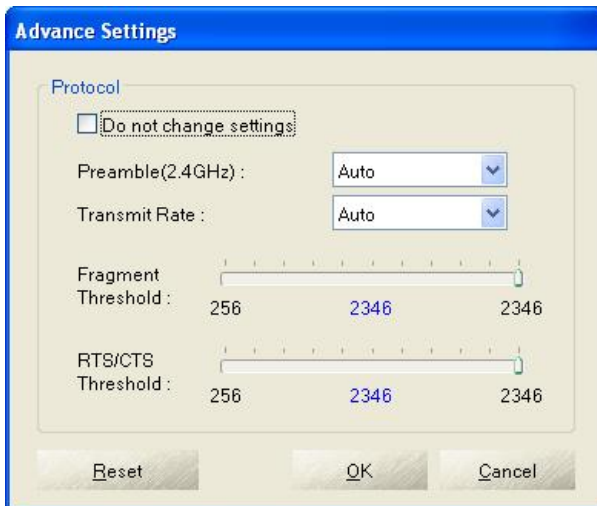

Figure 9: Advanced Settings Screen

Data - Advanced Settings Screen

Do not change settings	Enable this check box if you don't want to modify the settings in this screen.
Preamble (2.4GHz)	Normally, this should be left at "Auto".
Transmit Rate	Use this to manually set the speed, if desired. The default is "Auto".
Fragment Threshold	The default value is 2346. In some cases, you may be able to improve performance by adjusting this value.
RTS/CTS Threshold	The default value is 2346. In some cases, you may be able to improve performance by adjusting this value.
Reset	Click "Reset" to change setting back to default.

Network Status Screen

This screen displays the status of the current wireless link. Clicking the **Network Status** tab will display a screen like the following.
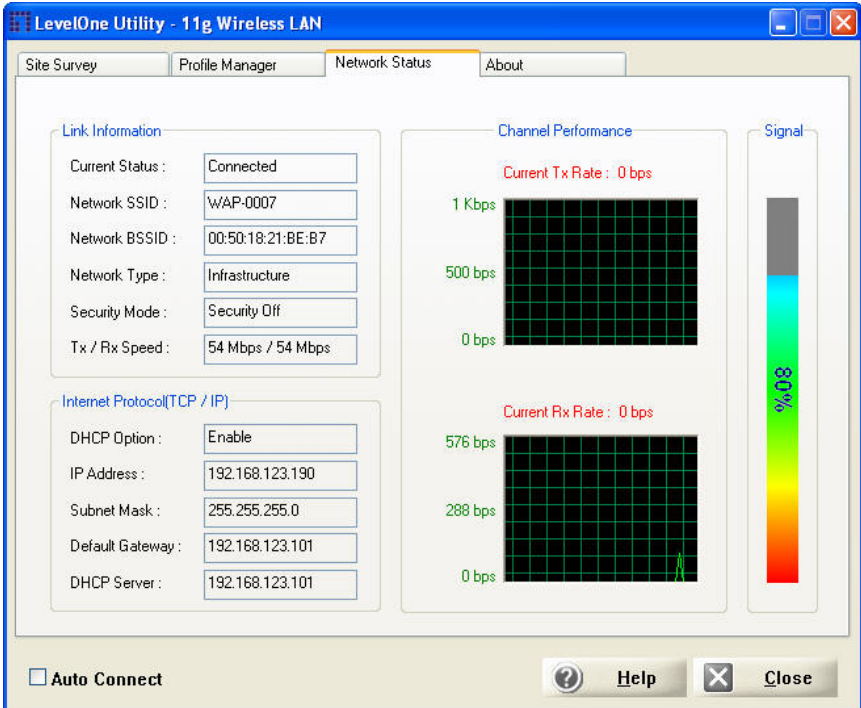

Figure 10: Network Status Screen

You may have to wait a few seconds for the screen to be populated.

Data - Network Status Screen

Link Information	
Current Status	It will indicate the current link status.
Network SSID	It shows the SSID or network name of the selected wireless network.
Network BSSID	It shows the MAC address of the access point.
Network Type	This will indicate "Infrastructure" or "Ad-hoc".
Security Mode	It shows the wireless security that the wireless network is using.
Tx/Rx Speed	It shows the current wireless connection speed.

Internet Protocol	
DHCP Option	It shows if the IP address was automatically obtained from a DHCP server.
IP Address	It shows the current IP address on the wireless interface.
Subnet Mask	Subnet mask for the current IP address.
Default Gateway	Gateway IP address associated with the current IP address.
DHCP Server	It shows the IP address of the DHCP Server.
Channel Performance	
Channel Performance	It graphically presents the Transmission (Tx) rate and Receiving (Rx) rate over time.
Signal	
Signal	It graphically presents the Signal strength.

About Screen

This screen displays details of the traffic sent or received on the current Wireless network.
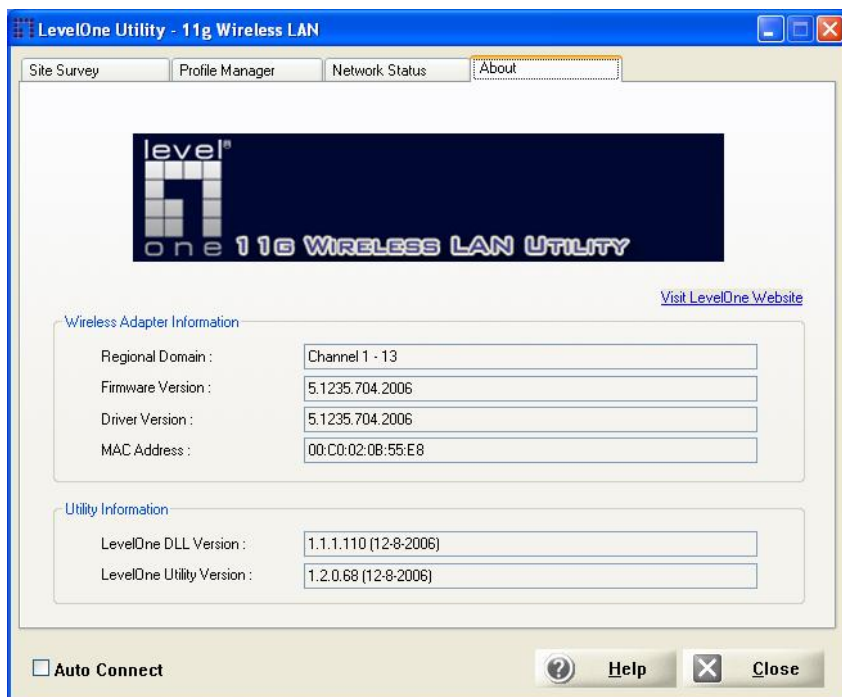

Figure 11: About Screen

This tab shows the following information:

Wireless Adapter Information

- Regional Domain
- Firmware Version
- Driver Version
- MAC Address

Utility Information

- Wireless DLL Version
- Wireless Utility Version

Appendix A

Specifications

USB Adapter

Bus Type:	USB 2.0
Data Rates:	54, 48, 36, 24, 18, 12, 9, and 6 Mbps (802.11g)
	11, 5.5, 2, 1 Mbps (802.11b)
Frequency Band:	2.4GHz
Wireless Medium:	DSSS and OFDM
Media Access Protocol:	CSMA/CA
Operating Channels:	1-14(FCC:1-11、ETSI:1-13、Japan:1-14)
Receive Sensitivity:	
802.11g	54 Mbps: -71 dBm
	48 Mbps: -73 dBm
	36 Mbps: -77 dBm
	24 Mbps: -81 dBm
	18 Mbps: -83 dBm
	12 Mbps: -83 dBm
	9 Mbps: -83 dBm
	6 Mbps: -83 dBm
802.11b	11 Mbps: -87 dBm
	5.5 Mbps: -88 dBm
	2 Mbps: -89 dBm
	1 Mbps: -89 dBm
Wireless Medium:	DSSS (Direct Sequence Spread Spectrum)
Media Access Protocol:	CSMA/CA
Transmit Power:	
802.11g:	14±2 dBm
802.11b:	16±2 dBm
Security:	64/128-bit WEP
	WPA/WPA2—Wi-Fi Protected Access
Standards Conformance:	WPA/WPA2 certified, IEEE 802.11g, IEEE 802.11b
EMI:	FCC, CE
Environmental Range:	

Operating temperature:	0° to 40°C (32° to 104°F)
Operating humidity:	0 to 90% non-condensing
System Requirements	Notebook or desktop PC with USB port; USB 2.0 required for 54 Mbps data rate
	Notebook or desktop PC must be running Windows XP/2000

Appendix B
About Wireless LANs

This Appendix provides some background information about using Wireless LAN (WLAN).

Modes

Wireless LANs can work in either of two (2) modes:

- Ad-hoc
- Infrastructure

Ad-hoc Mode

Ad-hoc mode does not require an Access Point or a wired (Ethernet) LAN. Wireless Stations (e.g. notebook PCs with wireless cards) communicate directly with each other.

Infrastructure Mode

In Infrastructure Mode, one or more Access Points are used to connect Wireless Stations (e.g. Notebook PCs with wireless cards) to a wired (Ethernet) LAN. The Wireless Stations can then access all LAN resources.

Note!	**Access Points can only function in "Infrastructure" mode, and can communicate only with Wireless Stations which are set to "Infrastructure" mode.**

BSS/ESS

BSS

A group of Wireless Stations and a single Access Point, all using the same ID (SSID), form a Basic Service Set (BSS).

Using the same SSID is essential. Devices with different SSIDs are unable to communicate with each other.

ESS

A group of Wireless Stations, and multiple Access Points, all using the same ID (ESSID), form an Extended Service Set (ESS).

Different Access Points within an ESS can use different Channels. In fact, to reduce interference, it is recommended that adjacent Access Points SHOULD use different channels.

As Wireless Stations are physically moved through the area covered by an ESS, they will automatically change to the Access Point which has the least interference or best performance. This capability is called **Roaming**. (Access Points do not have or require Roaming capabilities.)

Channels

The Wireless Channel sets the radio frequency used for communication.

- Access Points use a fixed Channel. You can select the Channel used. This allows you to choose a Channel which provides the least interference and best performance. In the USA and Canada, 11 channels are available. If using multiple Access Points, it is better if adjacent Access Points use different Channels to reduce interference.
- In "Infrastructure" mode, Wireless Stations normally scan all Channels, looking for an Access Point. If more than one Access Point can be used, the one with the strongest signal is used. (This can only happen within an ESS.)
- If using "Ad-hoc" mode (no Access Point), all Wireless stations should be set to use the same Channel. However, most Wireless stations will still scan all Channels to see if there is an existing "Ad-hoc" group they can join.

CE Marking Warning

Hereby, Digital Data Communications, declares that this (Model-no. WNC-0305USB) is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

The CE-Declaration of Conformity can be downloaded at:

http://www.levelone.eu/support.php