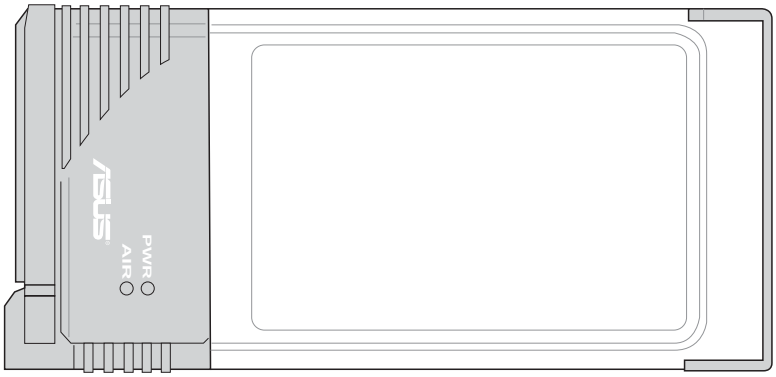
ASUS WLAN Card

WL-100gE

(For 802.11g & 802.11b Wireless Networks)



Quick Start Guide

QE2159 / Jul 2005

English

Installation Procedures

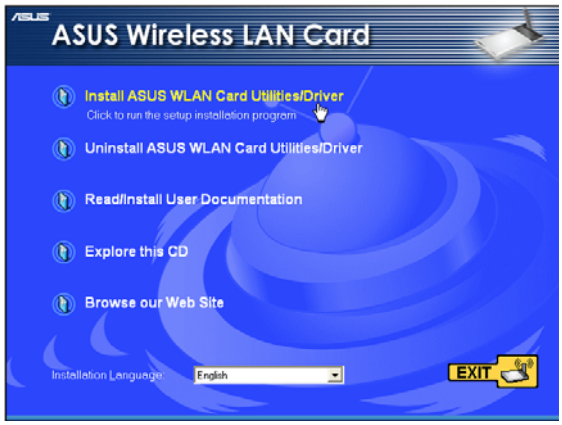
Important: Install the WLAN card utilities before inserting the WLAN Card into your computer.

Follow these two easy steps before using the WLAN card.

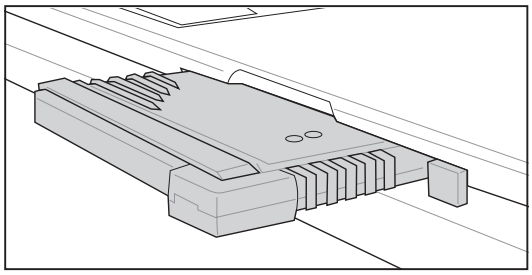
1. Install the WLAN card utilities and driver from the support CD.
2. Insert the WLAN card into your computer.

Installing the WLAN utilities and driver

Follow these instructions to install the WLAN card utilities and driver. Insert the support CD and an autorun menu will appear. If your autorun is disabled, double click **SETUP.EXE** in the root directory of the support CD. Select your language and click Install **WLAN Card Utilities/Driver.** Follow instructions to complete the installation.



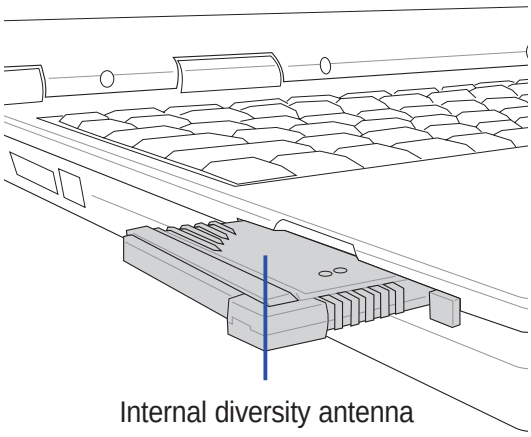
When the program is launched for the first time (during Windows restart), you will be asked which function to use. Select to use utilities for more functions.



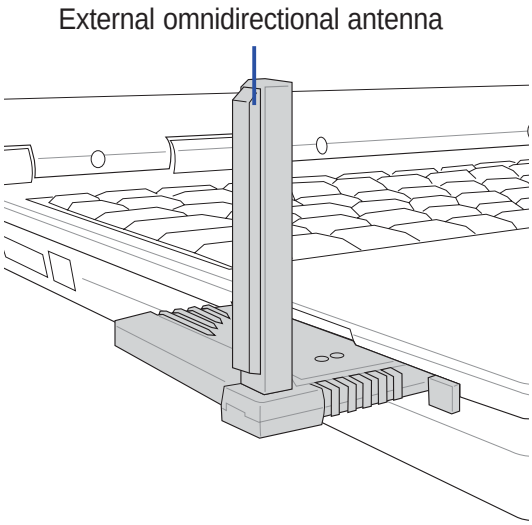
Carefully insert the WLAN card into your computer's PC card slot. Windows will automatically find and configure the WLAN card using the drivers installed in the previous steps.

Orientating the Antenna

The ASUS WLAN Card has two integrated antennas, one external omnidirectional antenna and the other is a built-in diversity antenna. It is recommended that you adjust the external antenna straight up for maximum range and higher link quality. Lower the external antenna when transporting your Notebook PC.



Inserted with antenna down



Inserted with antenna up

Reading the WLAN Status Indicators

The part of the WLAN Card that protrudes out of the PCMCIA socket consists of two LEDs that indicate the status of the WLAN Card .

Power LED

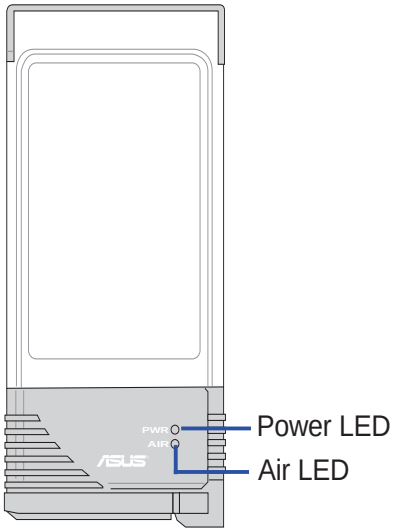
OFF: No power or error.

ON: Power ON.

Air LED

OFF: No wireless activity.

Blink: Transmitting/receiving wireless data.

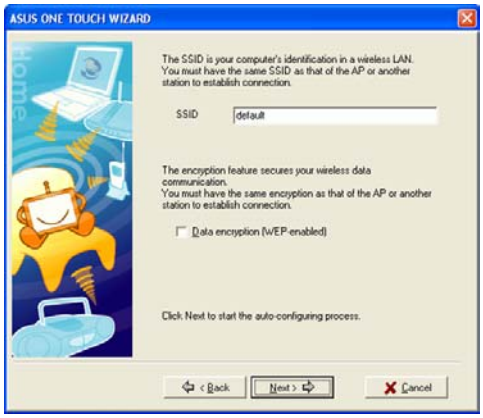


English

One Touch Wizard (new wireless LAN)

Use the One Touch Wizard to setup your wireless connection.

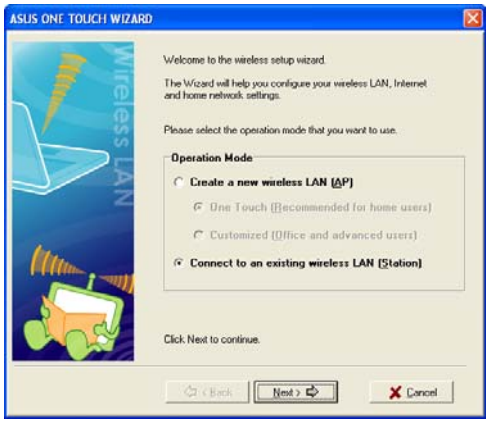
1. Select **Create a new**... and click **Next** to use the simplest configuration or select another option first.



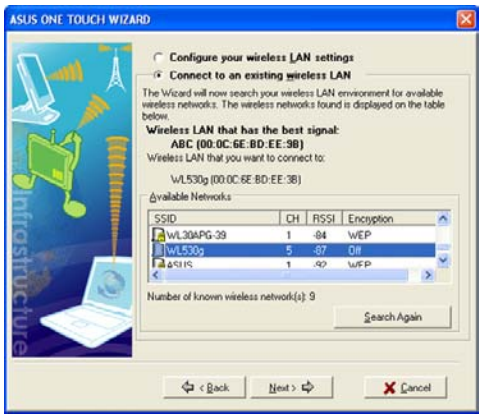
2. Enter the SSID name of the access point that you wish to connect to. Select **Data encryption** if secured connections are enabled.

One Touch Wizard (existing LAN)

Use the One Touch Wizard to setup your wireless connection.



1. Select **Connect to**... and click **Next** to use the simplest configuration or select another option first.

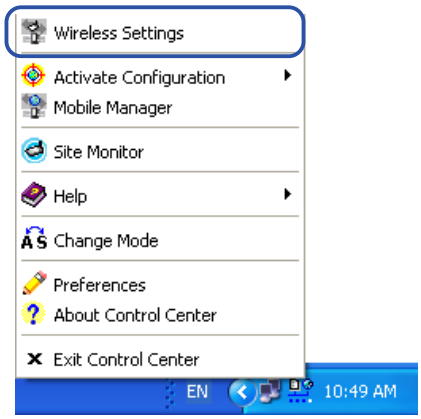


2. Select an AP from the available networks.

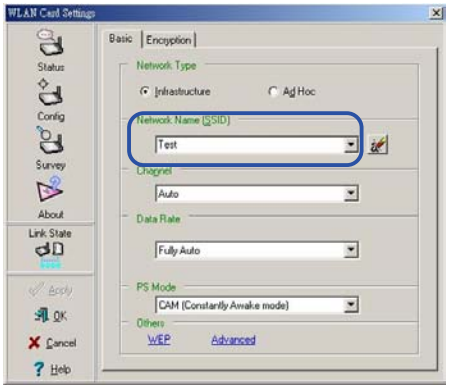
English

Configuring the WLAN utility

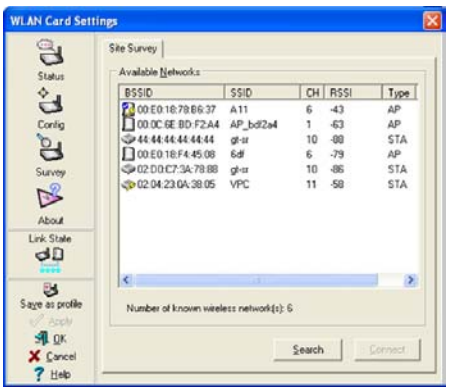
After installing the WLAN Card Utilities, you will need to make some settings before being able to use your wireless connection. Double-click the WLAN Control Center icon to start the utility.



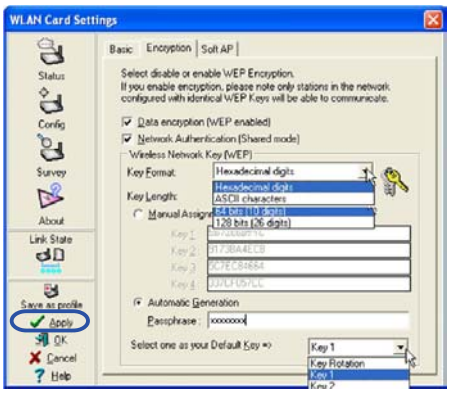
1. Right-click the WLAN icon and select "Wireless Settings"



2. Set the Network Name (SSID) to the same name as the SSID set in your wireless access point.

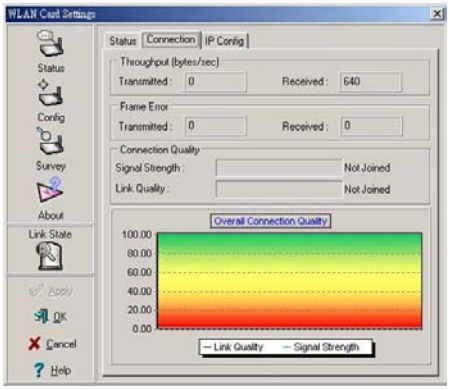


3. Use "Site Survey" if you don't know the name of your access point(s).



4. Encryption settings must also match those set in the access point. Ask your network administrator about settings if necessary. Click **Apply** to save your settings

5. Check the "Status" page to see the "Association State". It should show "Connected - xx:xx:xx:xx:xx:xx".

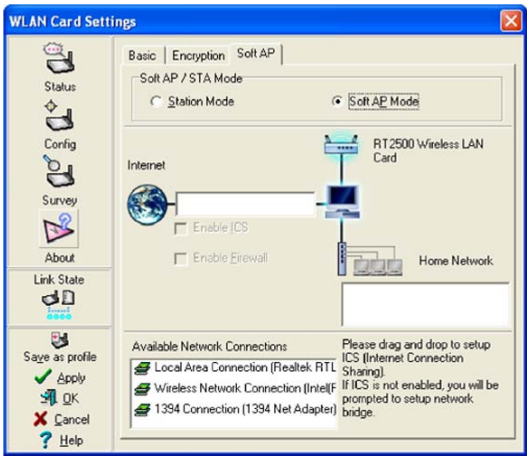


6. You can also see the connection quality on the "Connection" page. Click **OK** to exit the utility.

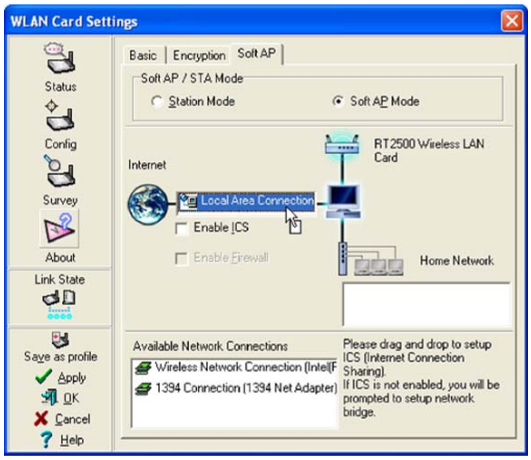
English

Soft AP (Windows XP Only)

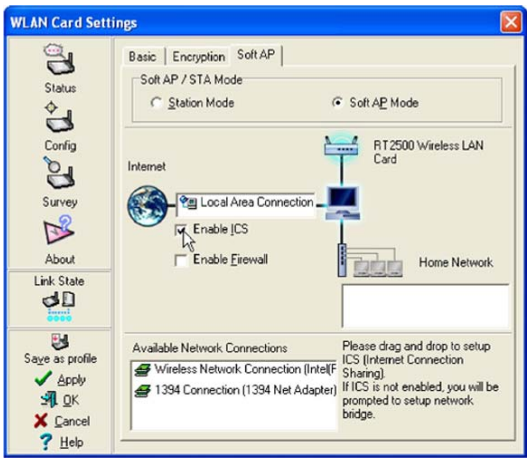
Soft AP mode allows the WLAN card to act as a virtual access point. The computer needs to be connected to a wired network using an Ethernet connection in order to provide network access to WLAN clients.



1. Select Soft AP Mode



2. Drag and drop a wired network connection next to the globe icon.



3. Enable ICS* and Firewall if desired. Refer to Windows help for information on “Internet Connection Sharing”.

4. You can easily switch between Soft AP and Station mode by right clicking the taskbar icon and selecting “A-S Change Mode”.

*ICS is used to share this computer’s Internet connection with the rest of the computers on your network. When this computer is connected to the Internet, communication to and from the Internet to all the computers on your network are sent through this computer, called the host computer. Other computers can send and receive email and access the Web as if it were connected directly to the Internet.

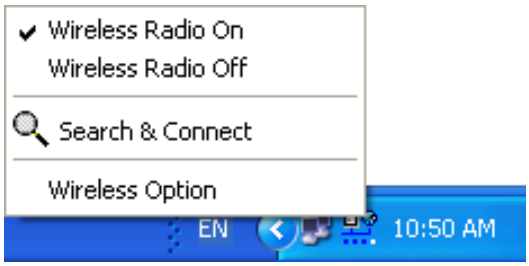
Windows XP Wireless Options

The wireless options shown below is only available for Windows XP. The first time you run the Control Center utility, it will automatically show. Select one of the radio buttons to decide which interface to use with your WLAN Card.

Only use XP wireless function – Only use "Windows XP" wireless network settings to configure the WLAN Card.

Only use utilities and disable XP wireless function – Only use "WLAN Card utilities" to configure the WLAN Card. (recommended)

You can return to the Wireless Option setting at any time by left clicking the control center icon and choosing "Wireless Option".



Taskbar Left-Click Menu

WLAN Control Center

Control Center is an application that makes it easy to launch applications and activate network location settings. Control Center starts automatically when the system boots. Whenever Control Center is running, you will see a Control Center icon displayed on the Windows taskbar.

Starting the Control Center manually

- Select **WLAN Control Center** in Windows Start menu.

or

- Double click the **WLAN Control Center** icon on the desktop.

English

Using the Control Center Taskbar

The Control Center Taskbar menu display the following information:

- The link quality of the WLAN Card (Excellent, Good, Fair, Poor, Not Linked)
- Whether the WLAN Card is connected to the Internet (Blue: Connected, Gray: Not Connected)

Taskbar Icon and Status (Station mode)

Taskbar Icon and Status (Access Point mode)

Wireless Status Icons (on the taskbar)

Excellent link quality and **connected to Internet** (Infrastructure)

Good link quality and **connected to Internet** (Infrastructure)

Fair link quality and **connected to Internet** (Infrastructure)

Poor link quality and **connected to Internet** (Infrastructure)

Not linked but **connected to Internet** (Infrastructure)

Excellent link quality but **not connected to Internet** (Infrastructure)

Good link quality but **not connected to Internet** (Infrastructure)

Fair link quality but **not connected to Internet** (Infrastructure)

Poor link quality but **not connected to Internet** (Infrastructure)

Not linked and **not connected to Internet** (Infrastructure)

Taskbar Icon - Right Menu

Right-clicking the taskbar icon shows the following menu items:

- **Wireless Settings** – Launches Wireless Settings application.
- **Activate Configuration** – Allows you to set which profile to use.
- **Mobile Manager** – Launches Mobile Manager application.
- **Site Monitor –** Launches the Site Monitor application.
- **Change Mode** (Windows XP Only) - Configures your card in Station (STA) or Soft Access Point (Soft AP) mode. In STA mode, your card connects to an access point to access a wireless network or the Internet. In Soft AP mode, your card transmits and receives signals to and from other WiFi devices in a wireless network.
- **Preferences** – Customizes the way the Control Center program behaves. You can create a Control Center shortcut on the desktop. You can also set whether Control Center starts up with Windows.
- **Exit** – Closes the Control Center program.

Taskbar Icon - Left Menu

Left-clicking the taskbar icon shows the following menu:

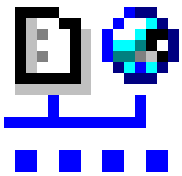
Taskbar Left-Click Menu

- **Wireless Radio On** – Turns the wireless radio ON.
- **Wireless Radio Off** – Turns the wireless radio OFF.
- **Search & Connect** – View the properties of available Access Points within range.
- **Wireless Option** (Windows XP only) – Sets your Windows XP wireless networking environment.

Taskbar Icon - Launch Wireless Settings

Double-clicking the taskbar icon:

- Launches the Wireless Settings application.



English

Wireless Settings Utility

Wireless Settings is an application that allows you to control your WLAN Card. Use Wireless Settings to View or Modify the configuration settings and monitor the operational status of your PC Card. Once Wireless Settings is launched, you can see the tabbed property sheet. This property sheet is composed of tabbed “pages”, each with its own group of feature-specific settings.

Starting Wireless Settings

- Open the Windows **Control Panel**, and then double-click the **WLAN Card Settings** icon.

or

- Click the Windows **Start** button, select **Programs | ASUS Utility | WLAN Card | Wireless Settings**.

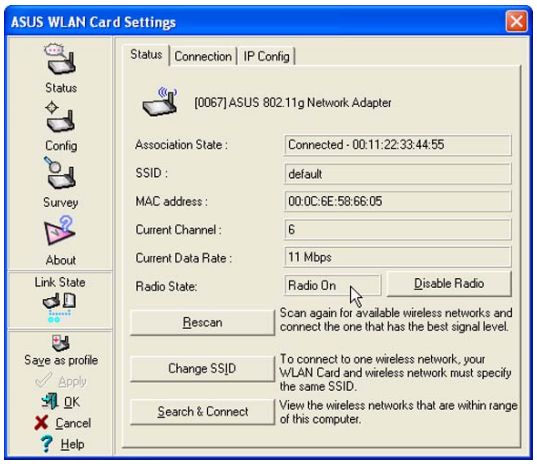
or

- Right-click the **Control Center icon** on the Windows taskbar, select **Wireless Settings**.

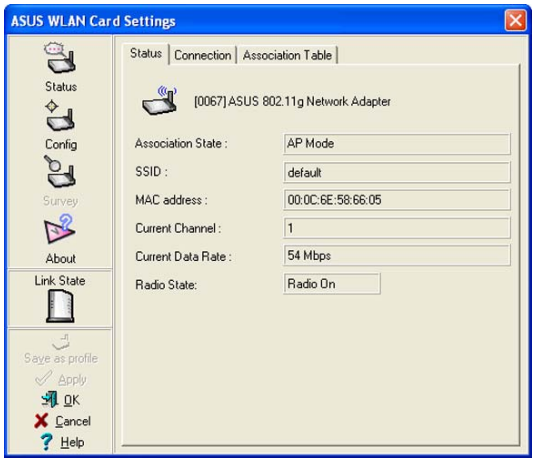
NOTE: If you have more than one WLAN device, you will be given a device selection window when you launch the “Wireless Settings” utility. Select the appropriate model if you face this situation.

Status - Status Tab

You can view the information about the WLAN Card from the general menu. These fields are blank if the WLAN Card does not exist. You can turn OFF the WLAN Card by clicking the “Disable Radio” button.



Station Mode



Access Point Mode

Association State

Displays the connection status as follows:

Connected - The station is now associated with one wireless LAN device. When operating in Infrastructure mode, this field shows the MAC address of the Access Point with which you are communicating. When operating in Ad Hoc* mode, this field shows the virtual MAC address used by computers participating in the Ad Hoc* network.

Scanning... - The station is now attempting to authenticate and associate with the desired Access Point or Ad Hoc* node.

Disconnected - The link is connected, but no beacon received.

SSID

Displays the Service Set Identifier (SSID) that the card is either associated or intending to join.

MAC address

Indicates the hardware address of the card. MAC address is a unique identifier for networking devices (typically written as twelve hexadecimal digits 0 through 9 and A through F, six hexadecimal numbers separated by colons, i.e. 00:E0:18:F0:05:C0).

Current Channel

Displays the radio channel that the card is currently tuned. This number changes as the radio scans the available channels.

Current Data Rate

Displays the current transmit data rate in megabits per second (Mbps).

Radio State

Shows the wireless radio ON or OFF.

Radio On - When the wireless radio is turned ON, the following icon appears in the upper left of the Settings property page.

Radio Off- When the wireless radio is turned OFF, the following icon appears in the upper left of the Settings property page.

Rescan – Force the radio to rescan all available channels. If your link quality or signal strength is poor, rescanning can be used to push the radio off a weak Access Point and search for a better link with another Access Point. This function will take some time to complete.

Change SSID – Click on this to set the SSID.

Search & Connect – Click on this to connect to an available network.

English

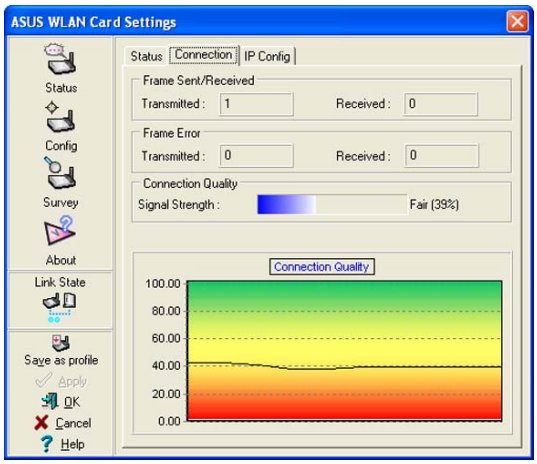
Save as Profile

Later, when you make individual settings, you may want to use profiles to save your settings. Profiles will help you combine all your settings for work, home, roaming, and other locations so that you do not have to repeat individual settings. When you travel from work to home, for example, choose a “home” profile that contains all your settings for home use. When you travel back to work, choose an “office” profile.

Activate Configuration

Auto roaming is enabled by default and will automatically switch to stronger access points. You can uncheck it if you have many access points and do not want to constantly switch to different networks. If you want to use a particular profile. You can also check it here.

Status - Connection



You can view the current link statistics about the WLAN Card. These statistics are updated once per second and are valid only if the WLAN Card exists.

Frame Sent/Received

Transmitted - The number of frames that were transmitted.

Received - The number of frames that were received.

Frame Error

Transmitted - The number of frames that were not successfully transmitted.

Received - The number of frames that were not successfully received.

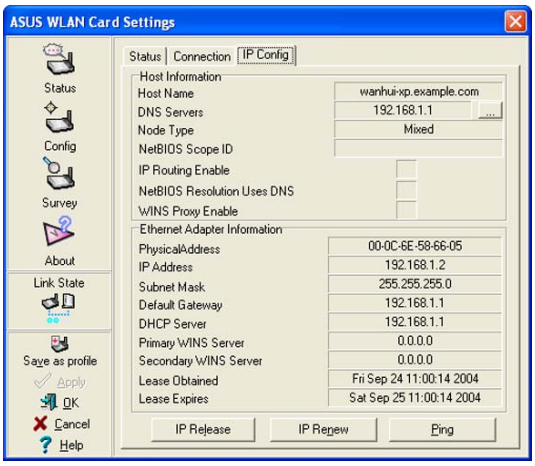
Connection Quality

Signal Strength - Reflects the signal level related to the Access Point or Ad Hoc node the station is currently connected to. Ratings are: Excellent, Good, Fair, and Poor.

Overall Connection Quality

It is derived from the current "Signal Strength". A graph displays a connection quality range between 0 and 100 percent.

Status - IP Config



IP Config tab shows all the current network configuration information for the WLAN Card. Use it to verify your network settings.

IP CONFIG will display all the current TCP/IP configuration values including the IP address, subnet mask, default gateway and Windows Internet Naming Service (WINS) and DNS configuration.

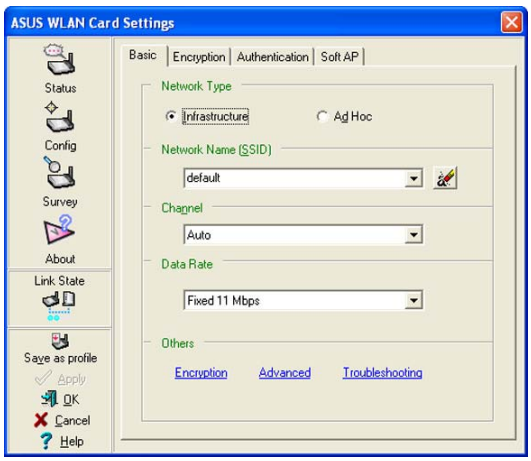
Button

IP Release - Clicking this button will attempt to release the DHCP IP address for the WLAN Card in case you wish to remove your IP address.

IP Renew - Clicking this button will attempt to renew the DHCP IP address for the WLAN Card in case you want to obtain a new IP address.

NOTE: The IP Release and IP Renew buttons can only be used on the WLAN Card that is configured with DHCP.

Config - Basic



Lets you can change the WLAN Card configurations without rebooting your computer.

Network Type

Infrastructure – Select the Infrastructure mode to establish a connection with an Access Point. Your computer is able to access wireless LAN and wired LAN (Ethernet), via an associated access point. The Channel field turns to “Auto” when “Infrastructure” is selected.

Ad Hoc – Select the “Ad Hoc” mode to communicate directly with each other without using an Access Point. An “Ad Hoc” network is typically formed quickly and easily without pre-planning. For example, share meeting notes between networked computers in a meeting room.

Network Name (SSID)

Use the SSID field to configure the SSID for the WLAN Card. You can enter a new SSID or select one from the drop-down list box. SSID stands for “Service Set Identifier”, which is a string used to identify a wireless LAN. You will only be able to connect Access Points which has the same SSID as the one you set. Use different SSIDs to segment the wireless LAN and increase security. SSIDs must all be printable characters and having a maximum of 32 case sensitive characters, such as “ Wireless LAN”.

NOTE: Set the SSID to a null string, if you wish to allow your station to connect to any Access Point it can find. But you cannot use null string in Ad Hoc mode.

Channel

Use the Channel field to select the radio channel for WLAN Card. In an "infrastructure" network, your WLAN Card will automatically select the correct frequency channel required to communicate with an Access Point, this parameter will be fixed in "Auto" and cannot be changed. In an "Ad Hoc" network, you can decide the channel number for the WLAN Card. Any WLAN Card can communicate in the same network if they have the same frequency channel setting.

The radio channels you may use depend on the regulations in your country. For United States (FCC) and Canada (IC), channels 1 to 11 are supported. For Europe (ETSI), channels 1 to 13 are supported. For operation in Japan (MKK), channels 1 to 14 are supported.

Data Rate

Select the transmit data rate (fix or auto). The data rates supported for the WLAN Cards are:

Auto – The adapter will adjust to the most suitable transmission rate.

Fix – 11g: Fix data rate to 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, or 54 Mbps.
11b: Fix data rate to 1, 2, 5.5, or 11 megabits per second.

Others

Encryption – Click on this to show the "Encryption" tab.

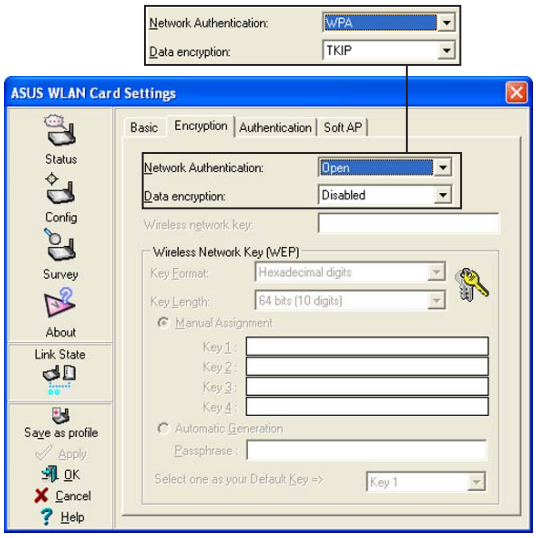
Advanced – Click on this to show the "Advanced" tab. In most cases, the default values do not have to be changed.

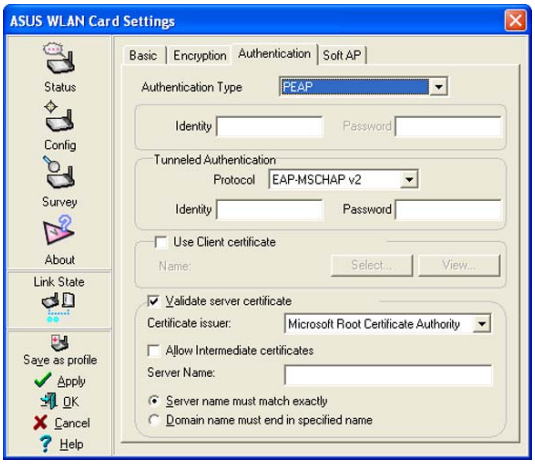
Troubleshooting – Click on this to show the Troubleshooting utility.

Click Apply to save and activate the new configurations.

Config - Encryption

Lets you configure the Wireless LAN Card encryption settings. For data confidentiality in a wireless environment, IEEE 802.11 specifies a Wired Equivalent Privacy (WEP) algorithm to offer transmission privacy similar to wired network. The WEP uses keys to encrypt transmit data packets and decrypt received data packets. The encryption process can scramble frame bits to avoid disclosure to others. The WPA (Wi-Fi Protected Access) is an improved security system for 802.11 that encryption data sent over radio waves. The WPA was developed to overcome the weakness of the WEP protocol.





Network Authentication

Because there is no precise bound in wireless LANs, it needs to be implemented in another mechanism to provide higher level of security. That is where Authentication services come in. If a mutual authentication relationship has not been established between stations and Access Point, an association cannot be established.

Open - Select this option allows the network to operate on an Open System mode. A null authentication algorithm. A station can authenticate with any other station or Access Point and without checking any WEP Key, even if one exists.

Shared - Select this option allows the network to operate on an Shared Key mode. In a Share Key Authentication system, four-step exchange of frames is required to validate that the station is using the same WEP Key as the Access Point.

WPA-PSK - Specifies the use of a preshared key with infrastructure mode. Enables WPA Preshared key, which enables your client adapter to associate to Access Point using WPA-PSK.

WPA-None - Specifies the use of a preshared key with Ad Hoc mode.

WPA - The network is operating in IEEE 802.1x authentication mode. This mode is environments with a RADIUS (Remote Access Dial-in User Service) infrastructure. In a RADIUS environment, various Extensible Authentication Protocol (EAP) are supported, including PEAP, TLS/Smart Card, TTLS, and LEAP.

Data encryption

For open and shared authentication mode, the selection of encryption type are Disable and WEP. For WPA-PSK and WPA authentication mode, it must support TKIP (Temporal Key Integrity Protocol) encryption, and may support AES (Advanced Encryption Standard) encryption.

Disabled - Disable the encryption function.

WEP - A WEP Key is used to encrypt your data before it is transmitted over the air. You will only be able to communicate with wireless devices that have use the same WEP keys.

TKIP: TKIP uses an encryption algorithm methods which is more stringent than the WEP algorithm and also uses existing WLAN calculation facilities to perform encryption operations. TKIP verifies the security configuration after the encryption keys are determined.

AES: AES is a symmetric 128-bit block encryption technique which works simultaneously on multiple network layers.

Wireless Network Key

Selecting “TKIP” or “AES” in the encryption filed is used as a password to begin the encryption proceed. Note: 8 to 63 characters are required.

Wireless Network Key (WEP)

This option is enable only if you enable WEP Encryption. The WEP Key is a 64 bits (5 byte) or 128 bits (13 byte) Hexadecimal digits that is used to encrypt transmit data packets and decrypt received data packets.

Key Format

You can enter the WEP Key as a Hexadecimal digits (0~9, a~f, and A~F), or as ASCII characters, based on the state of the Key Format.

Key Length

For 64 bits encryption, each Key contains exactly 10 hex digits, or 5 ASCII characters. For 128 bits encryption, each Key contains exactly 26 hex digits, or 13 ASCII characters.

Two ways to assign WEP keys

1. **Manual Assignment** - When you click this button, the cursor appears in the field for Key 1. For 64-bit encryption, you are required to enter four WEP Keys. Each Key contains exactly 10 hex digits (0~9, a~f, and A~F). For 128-bit encryption, you are required to enter four WEP Keys. Each Key contains exactly 26 hex digits (0~9, a~f, and A~F).
2. **Automatic Generation** - Type a combination of up to 64 letters, numbers, or symbols in the Passphrase column, then the Wireless Settings Utility uses an algorithm to generate four WEP Keys for encryption.

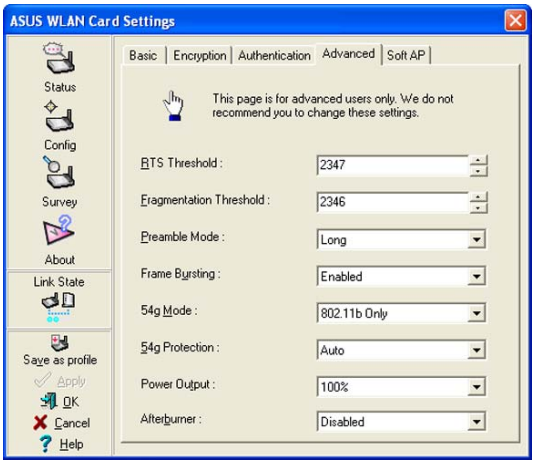
NOTE: This function ease users from having to remember their passwords and is compatible to some existing WLAN utilities, but it is not very secure. "Manual Assignment" is more secure.

Select one as your Default Key

The Default Key field lets you specify which of the four encryption keys you use to transmit data on your wireless LAN. You can change the default key by clicking on the down arrow at the right of this field, selecting the number of the key you want to use and then clicking the Apply button. As long as the Access Point or station with which you are communicating has the same key in the same position, you can use any of the keys as the default.

You then click the Apply button to create your encryption keys. After you click the Apply button, the Wireless Settings Utility uses asterisks to mask your keys.

Status - Advanced



This section allows you to set up additional parameters for the wireless router function. We recommend that you use the default values for all items in this window.

RTS Threshold (0-2347)

The RTS/CTS (Request to Send/Clear to Send) function is used to minimize collisions among wireless stations. When RTS/CTS is enabled, the router refrains from sending a data frame until another RTS/CTS handshake is completed. Enable RTS/CTS by setting a specific packet size threshold. The default value (2347) is recommended.

Fragmentation Threshold (256-2346)

Fragmentation is used to divide 802.11 frames into smaller pieces (fragments) that are

sent separately to the destination. Enable fragmentation by setting a specific packet size threshold. If there is an excessive number of collisions on the WLAN, experiment with different fragmentation values to increase the reliability of frame transmissions. The default value (2346) is recommended for normal use.

Preamble Mode

This parameter is used to control whether frames will transmit with the Long or Short Preamble. The default value is Long Tx Preamble.

Frame Bursting

Frame Bursting technology is standards-based Wi-Fi performance enhancement technology that improves wireless network efficiency and boosts throughput.

54g Mode

54g LRS (Limited Rate Support) - is used to communicate with older 11b clients that only support 4 rates. But 54g cards can still use all 12 rates.

54g Auto - support both 802.11b and 802.11g adapters.

54g Performance - will support ONLY high-performance 54g adapters.

All of these modes only pertain to when the STA is creating their own IBSS network.

802.11b only - support both 802.11b adapters.

All of these modes only pertain to when the STA is creating their own IBSS network. The default ad-hoc mode is 802.11b only.

54g Protection

Extended Rate PHY (ERP) protection mechanism of 802.11g definition.

Auto – Automatically change as AP announcement.

Enabled - Always send frame with protection.

Disabled - Always send frame without protection.

Power Output

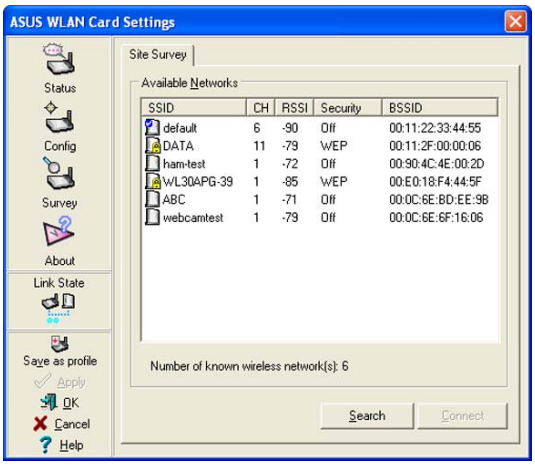
Indicates transmit power level.

Afterburner

It's is a proprietary solution to take advantage of the high data rate (125 Mbps), the consumer will have to possess a wireless card and router compliant with the Afterburner technology.

Click Apply to save and activate the new configurations.

Survey - Site Survey



Use the Site Survey tab to view statistics on the wireless networks available to the WLAN Card. The Site Survey tab is read-only with no user configurable data fields. Use the Site Survey tab to view the following network parameters.

- **SSID:** View the SSID (service set identification) of the available networks.
- **CH:** View the direct-sequence channel used by each network.
- **RSSI:** View the Received Signal Strength Indication (RSSI) transmitted by each network. This information is helpful in determining which network to associate to. The value is then normalized to a dBm value.
- **Encryption:** View wireless network encryption information. All devices in the network should use the same encryption method to ensure the communication.
- **BSSID:** View the media access control (MAC) address of the Access Point or the Basic Service Set ID of the Ad Hoc node.

NOTE: Some Access Points can disable broadcasting SSID to hide themselves from "Site Survey" or "Site Monitor" for added security but still allow you to join if you know their SSID.

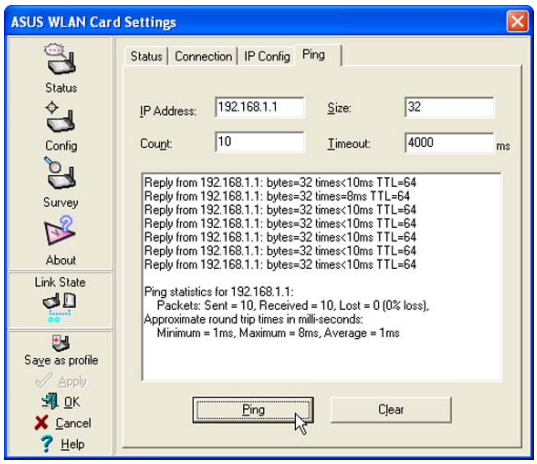
Buttons

Search – Scan all available wireless networks and show the scan result in the "Available Network List".

Connect – To associate a network, select it from the "Available Network List" and click this button.

English

Ping



The Ping tab allows you to verify the connection of your computer with another computer in a network. To ping a connection:

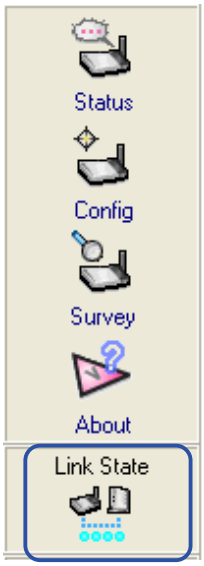
1. Type the IP address of the connection you want to verify in the **IP Address** field.
2. Configure the ping session by assigning the size and count of packet to send, and the time limit for a ping session to continue (in milliseconds).
3. Click the **Ping** button.

During the ping session, the **Ping** button toggles into a **Stop** button. Click **Stop** anytime to cancel the ping session.

The session field displays information on the verified connection including the roundtrip time (minimum, maximum, and average) and packets sent, received, and lost after a ping session.

Click the **Clear** button to clear the session field.

Link State



WLAN Card "Link State" icon appears on the left side of the WLAN Card Settings. Use the icon to view the current signal status.

Excellent Link Quality (Infrastructure)

Good Link Quality (Infrastructure)

Fair Link Quality (Infrastructure)

Poor Link Quality (Infrastructure)

Not linked (Infrastructure)

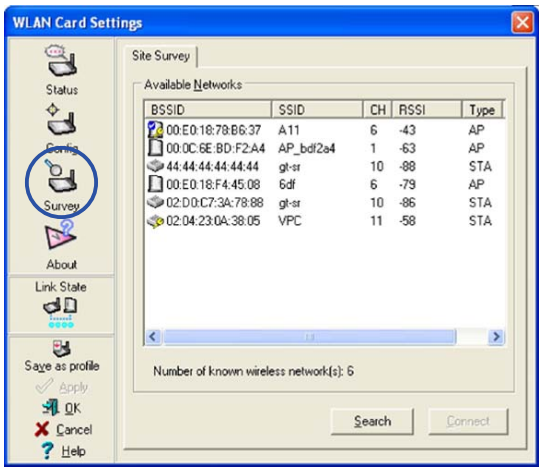
Exit Wireless Settings

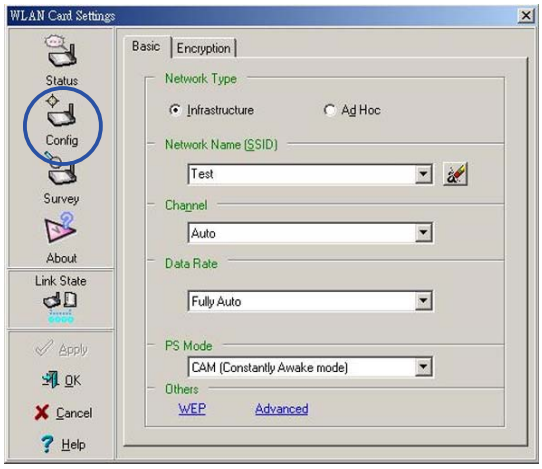
To exit Wireless Settings, you can click **OK** or **Cancel**. This utility may be closed at any time and from any tab. If you did not save the configuration settings, you will be prompted to do so.

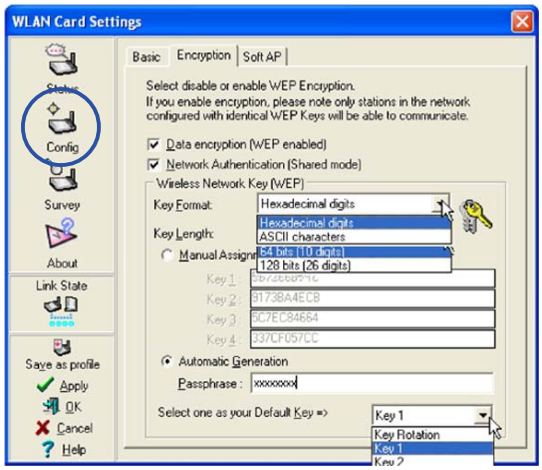
Ad Hoc

The Wireless LAN card when set to Ad Hoc mode can connect to other wireless device(s) in a wireless network called an Ad Hoc network. To connect the Wireless LAN card to another wireless device:

1. Launch the Wireless Settings utility by double-clicking the Control Center icon in the Windows® taskbar.
2. Click the **Survey** button to scan available wireless device(s) within the Wireless LAN card's range. Select the wireless device you wish to connect. A wireless device is indicated by this icon ( ).





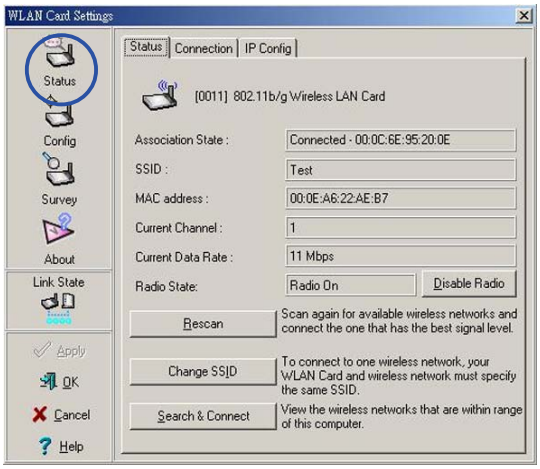


3. Click the **Config** button to configure the device settings. Set the Network type to **Ad Hoc**, then enter the **Network Name (SSID)** and **Channel** of wireless device you wish to connect. Click **Apply** when done.
4. Click the **Encryption** tab if your selected wireless device has an enabled WEP encryption ( ).

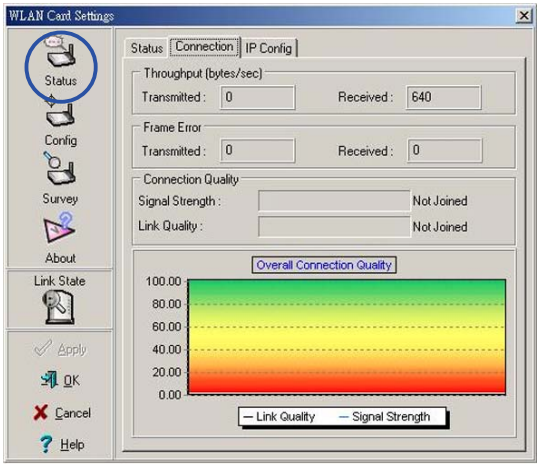
   Obtain the WEP encryption keys from the network administrator, then enter them in the **Key 1 ~ 4** fields. Click **Apply** when finish.

IMPORTANT! The encryption settings of the Wireless LAN card and the wireless device must be identical to establish a connection.

English



5. Click the **Status** button to verify if the Wireless LAN card is connected to the device. If connection is established, the **Association State** field shows "Connected - XX:XX:XX:XX:XX:XX"



6. Click the **Connection** tab to display the connection strength and link quality between the Wireless LAN card and the wireless device.

FCC Requirements

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..

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 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.

CAUTION: Any changes or modifications not expressly approved in this manual could void your authorization to use this device.

CAUTION: This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 2.5cm between the radiator and your body. Use on the supplied antenna.

Declaration of Conformity for R&TTE directive 1999/5/EC

Essential requirements – Article 3
Protection requirements for health and safety – Article 3.1a
Testing for electric safety according to EN 60950-1 has been conducted. These are considered relevant and sufficient.

Protection requirements for electromagnetic compatibility – Article 3.1b
Testing for electromagnetic compatibility according to EN 301 489-1 and EN 301 489-17 has been conducted. These are considered relevant and sufficient.

Effective use of the radio spectrum – Article 3.2
Testing for radio test suites according to EN 300 328 has been conducted. These are considered relevant and sufficient.

CE Mark Warning

This is a Class B product, in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.