

**Chung Nam Electronics (CNE)  
IEEE 802.11g SPI WLAN Card  
(Model #: WLC-700GC)  
Installation Manual**

**Version 0.1**

December 2007

# Table of Contents

|   |    |
|---|----|
| Chapter 1 Introduction .....                                    | 3  |
| Chapter 2 Installation Procedure.....                           | 4  |
| 2.1 Installing the software drivers on MS Windows platform..... | 4  |
| 2.2 Configuration .....   | 7  |
| Chapter 3 Regulatory Information .....                          | 10 |
| 3.1 FCC Information to User .....                               | 10 |
| 3.2 FCC Guidelines for Human Exposure .....                     | 10 |
| 3.3 FCC Electronic Emission Notices .....                       | 10 |
| 3.4 FCC Radio Frequency Interference Statement .....            | 11 |
| 3.5 OEM installation Guide .....                                | 12 |
| Chapter 4 Technical Specifications.....                         | 14 |

# Chapter 1 Introduction

The CNE 802.11g WLAN NIC is a complete wireless high speed Network Interface Card (NIC). It conforms to the IEEE 802.11g protocol and operates in the 2.45GHz ISM frequency bands.

It provides a complete reference design evaluation platform of hardware and software to system providers or integrators requiring wireless data communications capability and is ideal for integration into computer platforms.

- Fully compliant with the IEEE 802.11g WLAN standards
- FCC Certified Under Part 15 to Operate in the 2.45 GHz Bands
- Support for 54, 48, 36, 24, 18, 12, 9, and 6 Mbps OFDM, 11 and 5.5 Mbps CCK and legacy 2 and 1 Mbps data rates
- Driver Supports Microsoft Windows ® XP and 2000 (SR1)



Model: WLC-100GC

# Chapter 2 Installation Procedure

## 2.1 Installing the software drivers on MS Windows platform

The driver installation procedure on MS Windows platform is described as follows. Windows XP is used as the example. It is similar in other Windows platform (e.g. Windows 2000).

- 1) Make sure that the SPI card has been inserted in your machine properly via a SPI to CardBus interface.
- 2) Copy the driver into the notebook.

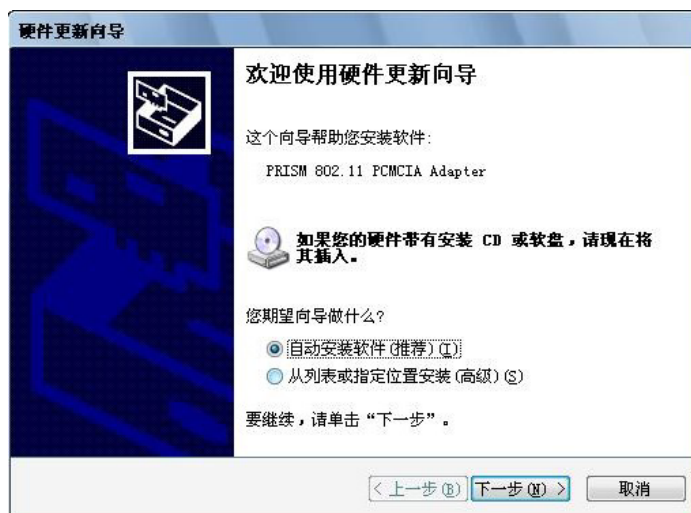


Figure 2-1

- 3) Select option 2 to continue, click Next on the screen, figure 2-2. Click Cancel to end the Installation

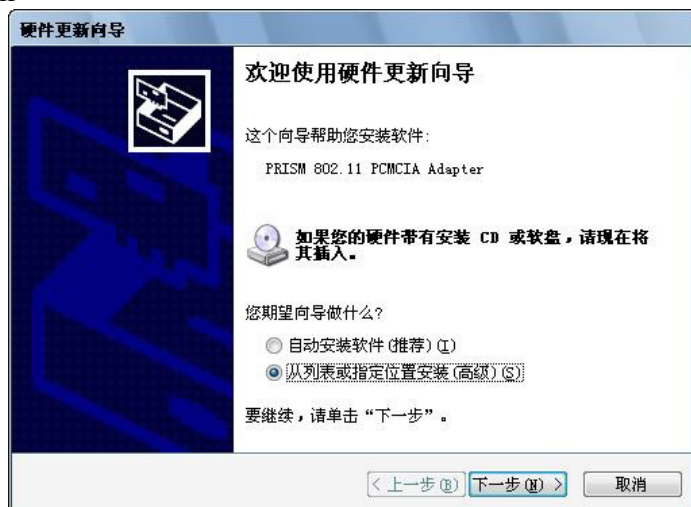


Figure 2-2

- 4) Select the folder where you copied to the driver you copied.

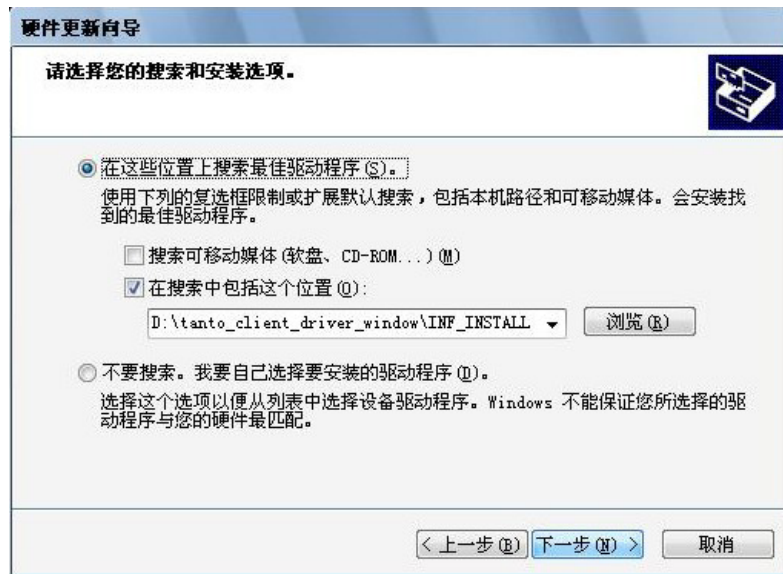


Figure 2-3

- 5) Select the **Continue installation** to go to next steps

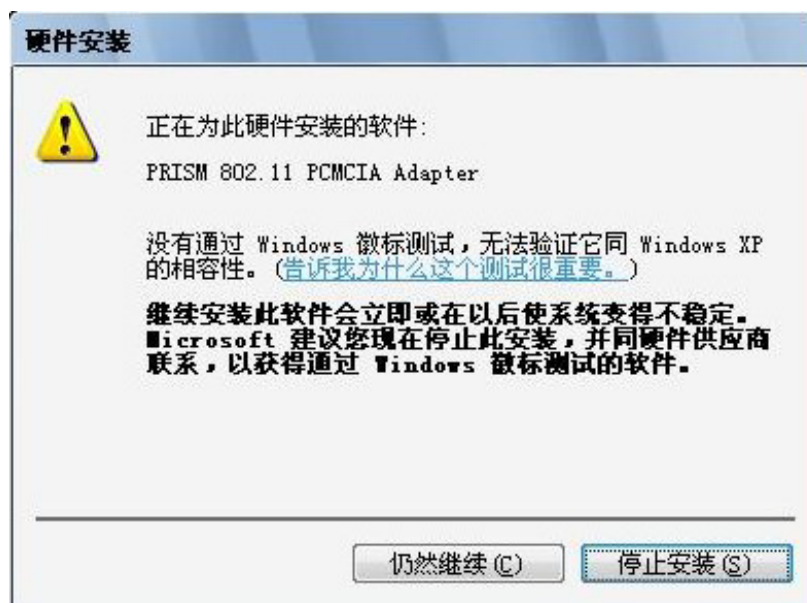


Figure 2-4

6) Please wait for a while.



Figure 2-5

7) Select the Finish to complete the driver installation



Figure 2-6 Finish

## 2.2 Configuration

1) After reboot the PC, an icon is displayed as the figure 2-7

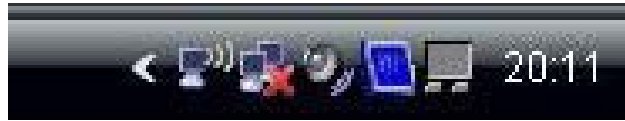


Figure 2-7 icon

2) Double click the **icon** to go to next step configuration, figure 2-8



Figure 2-8

3) Select the **network information** to go to next step figure 2-9



Figure 2-9

4) Select the Access point into list, type the password



Figure 2-10



5) Select the **connect** to Access Point



# Chapter 3 Regulatory Information

## 3.1 FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

## 3.2 FCC Guidelines for Human Exposure

*Warning:*

*The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.*

## 3.3 FCC Electronic Emission Notices

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
2. This device must accept any interference received, including interference that may cause undesired operation.

### **3.4 FCC Radio Frequency 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 when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area may cause harmful interferences, in which case the user will be required to correct the interference at his own expense.

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

### 3.5 OEM installation Guide

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

- 1) The antenna must be installed such that 20cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

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

#### End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ADSL modems, and similar equipment). The final end product must be labeled in visible area with the following:

“ Contains 802.11 b/g Module FCC ID:Q72WLC700GC

#### End Product Manual Information

The user manual for end users must include the following information in a prominent location “IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.”

#### IMPORTANT NOTE

**FCC RF Radiation Exposure Statement:** This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

#### RF Exposure Info (For mobile configuration)

To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter

This device is certified as modular radio form with the following antenna types. Change to other type requires re-evaluation/ certification

- 1) Dipole Antenna 1.8 dBi max



# Chapter 4 Technical Specifications

## Appendix A: Specifications

| Normal                |  |
|-----------------------|--|
| Interface             | SPI interface  |
| Standards             | IEEE802.11b; IEEE802.11g   |
| Operating System      | Windows 98; Windows Me; Windows 2000; Windows XP   |
| Transmission Distance | Indoor up to 100m, outdoor up to 250m (Standard transmission distance, It is limited to the environment).<br>Indoor up to 200m, Outdoor up to 830m (Adopt 2x to 3x eXtended Range™ WLAN transmission technology, it is limited to the environment) |
| Radio Data Rate       | 54/48/36/24/18/12/9/6/11/5.5/2/1Mbps (Auto Rate Sensing)   |
| Sensitivity           | 54M: -68dBm/8%PER (TYPICAL)<br>11M: -84dBm/8%PER   |
| Modulation            | 1M, 2M BPSK; 5.5M, 11M CCK; 6M, 9M, 12M, 18M QPSK<br>24M, 36M 16QAM; 48M, 54M 64QAM.   |
| Media Access Protocol | CSMA/CA with ACK   |
| Transmit Power        | 20mW (TYPICAL)   |
| Data Security         | WPA; 64/128/152-bit WEP; TKIP/AES  |
| Frequency             | 2.412 ~ 2.4835GHz  |
| Spread Spectrum       | Direct Sequence Spread Spectrum (DSSS)   |
| Channel               | 14   |
| Power Consumption     | Typically 685mA in full Transmit (TX), 515mA in full Receive (RX)  |

| Environmental and Physical |                              |
|----------------------------|------------------------------|
| Operating Temp             | 0°C~40°C (32°F~104°F)        |
| Storage Temp               | -40°C ~ 70°C (-40°F~158°F)   |
| Humidity                   | 10% ~ 95% RH, Non-condensing |
| Dimensions (W×D×H)         |                              |

## Appendix B: Glossary

- \* **802.11b** - The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- \* **802.11g** - specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- \* **Ad-hoc Network** - An ad-hoc network is a group of computers, each with a wireless adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.
- \* **DSSS (Direct-Sequence Spread Spectrum)** - DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).
- \* **FHSS (Frequency Hopping Spread Spectrum)** - FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.
- \* **Infrastructure Network** - An infrastructure network is a group of computers or other devices, each with a wireless adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.
- \* **Spread Spectrum** - Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect,

louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

- \* **SSID** - A **S**ervice **S**et **I**dentification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- \* **WEP** (**W**ired **E**quivalent **P**rivacy) - A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- \* **Wi-Fi** - A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see <http://www.wi-fi.net>), an industry standards group promoting interoperability among 802.11b devices.
- \* **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) - A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.
- \* **WPA** (**W**i-Fi **P**rotected **A**ccess) - A wireless security protocol use TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.