



# USI 802.11b WLAN CF Card

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Quick User Guide

### **Special Issue Regarding to the Configurations of the WLAN CF Card**

This *WLAN CF Card*, is designed and classified as a HAND-HELD device. It is designed to be adapted with the hand-held device such as PDA, PocketPC, Palm etc. The configuration other than these usage (e.g. with the body-worn manner) is not intended by the manufacturer and is strictly prohibited. In addition, for your own safety, it is recommended that keeping at least 20cm separation between the device and your body to minimize the possible RF exposure.

**This device must not be co-located or operating in conjunction with any other antenna or transmitter in order to avoid mutual interference.**

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# 1. Introduction

Wireless LAN is local area networking without wires, which uses radio frequencies to transmit and receive data between PC's or other network devices without wires or cables. Wireless LAN configurations include independent networks suitable for small or temporary peer-to-peer configurations and infrastructure networks, offering fully distributed data connectivity via micro cells and roaming.

The USI 802.11b WLAN CF card allows Pocket/Handheld PC (Windows CE 3.0 or 4.0) devices to connect to a Wi-Fi™ IEEE 802.11b wireless local area network (LAN), or communicate directly with other devices enabled for wireless LAN connectivity.

The USI 802.11b WLAN CF card is designed to meet the mobility, performance, security, interoperability, management, and reliability requirements of IEEE 802.11b high data rate standard.

## 1.1 Network Scenarios

## 1.2 Features

Features includes:

- CompactFlash™ form factor fits devices with CF Type I and Type II extended card slots
- Functions with Pocket/Handheld PC (Windows CE 3.0 or 4.0) devices with CF Type I and Type II extended card slots
- Compliant with 11 Mbps 802.11b high-speed specification
- Data rate 11/5.5/2/1 Mbps automatic fallback under noisy environment
- Power Management for decreased power consumption
- Interoperable with IEEE 802.11b compliant equipment
- Supports full mobility and seamless roaming from cell to cell
- User-friendly client manager utility
- Supports 64 and 128-bit WEP (Wired equivalent privacy).
- Direct Sequence Spread Spectrum (DSSS) technology provides robust,
  - interference-resistant and secure wireless connection.
  - Wireless connection without the hassles and cost of cabling.
  - Greater flexibility to locate or move networked device
  - The USI 802.11b WLAN CF Card has only one LED indicators
    - Transmit/Receive (flashing green)
    - Power ON/OFF LED(flashing red)



Figure 1

## 2. Installing and Configuring the Wireless Network for Pocket PC

### 2.1 Preparation

Before beginning the installation, prepare the following hardware and software:

- A USI 802.11b WLAN CF Card
- A Software and Documentation CDROM for USI 802.11b WLAN CF Card
- A Pocket PC(or Handhelp PC) with CF Type I and Type II extended card slots
- A Sync cable
- A Desktop computer with a CDROM drive

### 2.2 Installing the Driver and Utility from a CDROM

To download the driver and utility from the Software and Documentation CDROM to a Pocket PC in a Windows CE 3.0 or 4.0 environment:

**[NOTE]:** Refer to the documentation shipped with the Microsoft ActiveSync program to ensure the desktop computer used in the driver installation meets the system requirements for the ActiveSync program.

1. Connect the sync cable to a serial or USB port between the desktop computer and the Pocket PC.

Once a connection exists between the desktop computer and the Pocket PC, file transfers and data synchronization can take place.

2. Insert the Software and Documentation CDROM into the CDROM drive on the desktop PC.
3. Run the setup program(setup.exe) from the folder CD:\Win\_CE\CE300 or CD:\Win\_CE\CE400

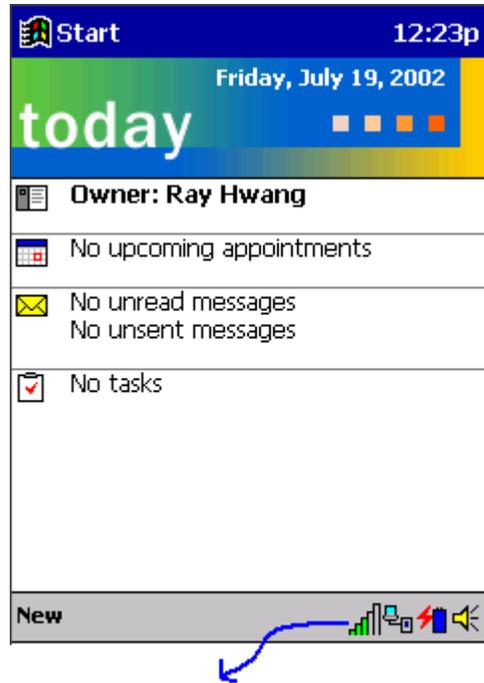
Follow the sequential setup-instructions on Desktop PC screen to finish installation.

4. Insert the USI 802.11b WLAN CF Card into the CF slot.



Figure 2

The Client Manager utility(See chapter 4) will be executed and hidden on the task bar of the Today screen



Tray icon of Client Manager

Figure 3

## 2.3 Configuring the Wireless Network in Windows CE

To configure the Wireless Network in a Windows CE environment.

1. Insert the USI 802.11b WLAN CF Card into a CF slot of the Pocket PC.
2. Click the "USI WLAN Settings(CF)" icon to run the Wireless Networking Setting utility from Start→Settings→System

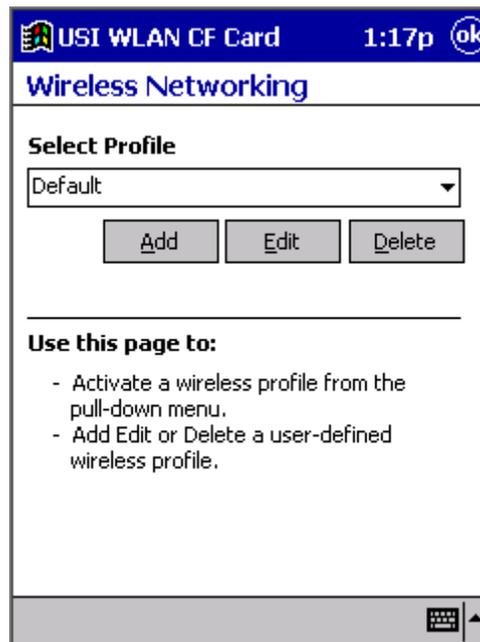


Figure 4

You can:

- (I) Select a profile and click the “OK” button to switch your station from one wireless network to another
- (II) Click “Add” or “Edit” button to add or edit the selected profile.
- (III) Click “Delete” button to delete the selected profile

(I) “Select a Profile”

You can select a configuration profile to switch your station from one wireless network to another.

**[NOTE]:** Before you can start using Configuration Profiles, you have to add a Configuration Profile for each wireless network environment that you want to participate in with your (mobile) Wireless Client Station. If you plan to use your Wireless Client Station in multiple networking environments that require different configuration settings, you can define dedicated profiles for each environment. For example you can create a Configuration Profile for:

- your office head quarters
- a branch-office
- your home or SOHO network

After creating configuration profiles, you can easily switch your station from one wireless network to another by selecting one of the profiles.

(II) “Add/Edit” Configuration profile

- Assign a name to your wireless configuration profile and select the Network Type to identify the type of wireless connection for this profile.
  - Access Point
  - Residential Gateway
  - Peer-to-Peer Group

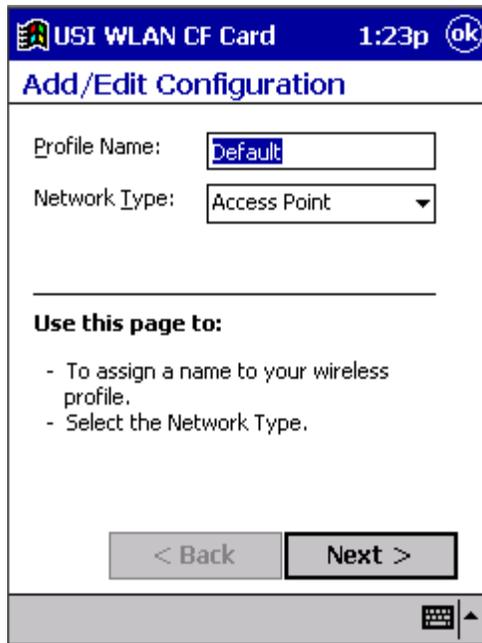


Figure 5

Click “Next” button to setup the Network Name

➤ Setup the Network Name

Use this screen to identify the Network Name of the wireless network to which you wish to connect your computer.

- When connecting to a Base Station, consult the LAN Administrator of the network for the correct value, or use the Scan button to retrieve a list of open wireless networks
- When connecting to a Peer-to-Peer Group, consult one of the workgroup participants for the correct value.

Valid value is a case-sensitive string of ASCII printable characters with a maximum of 32 characters. The value **ANY** will allow your computer to connect to the first open Base Station network that it can find.

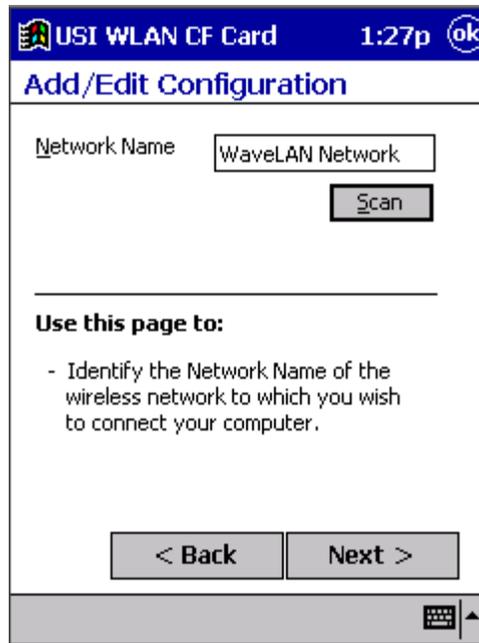


Figure 6

Click “Back” button to go back the last setting screen  
Click “Next” button to setup the encryption key.

➤ Security Settings

Use this screen to:

- Enable or disable wireless data encryption
- Enter the encryption key that applies in your network.

You can enter key values in either Alphanumeric Value or Hexadecimal Value. The encryption key value is case-sensitive. Consult your LAN Administrator for the correct value.

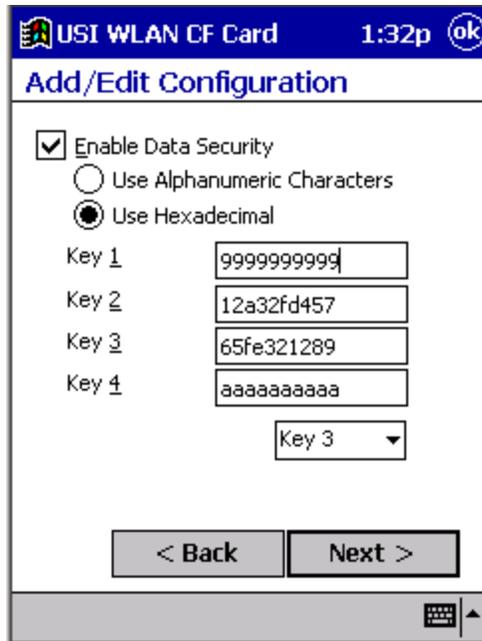


Figure 7

Click "Back" button to go back the last setting screen  
Click "Next" button to enable/disable the power saving

➤ Card Power Management

Use this screen to:

- Enable Power Management for low power consumption and wireless performance.
- Disable Power Management for default power consumption and high wireless performance (default).

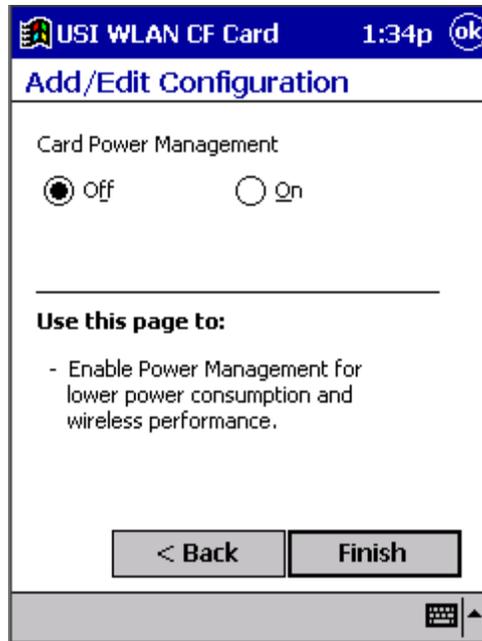


Figure 8

Click "Back" button to go back the last setting screen  
Click "Finish" button to finish the setting job

### 3. Using the Client Manager Utility

#### 3.1 Installing the Client Manager

The Client Manager utility comes bundled with the USI 802.11b WLAN CF Card driver on the Software and Documentation CDROM.

Once you complete the driver installation instructions described in Chapter 3 and insert the card into Pocket PC, the Client Manager utility will be executed and hidden on the task bar of the Today screen.

You can use the Client Manager to do “link test” and “site survey”. The Client Manager task tray icon conveys real-time signal strength and connection status. The Client Manager also displays the driver and firmware revision data. Alternatively, you can configure the USI 802.11b WLAN CF Card by clicking the tray icon on the task bar.

#### 3.2 The meaning of Tack Tray Icons

ICON	Status
	Excellent connection
	Good connection
	Marginal connection
	Poor connection
	No connection
	No quality info available (no driver, incompatible driver, etc)

#### 3.3 Using the Client Manager

Click the tray icon to enter the Client Manager screen and see the wireless network status.

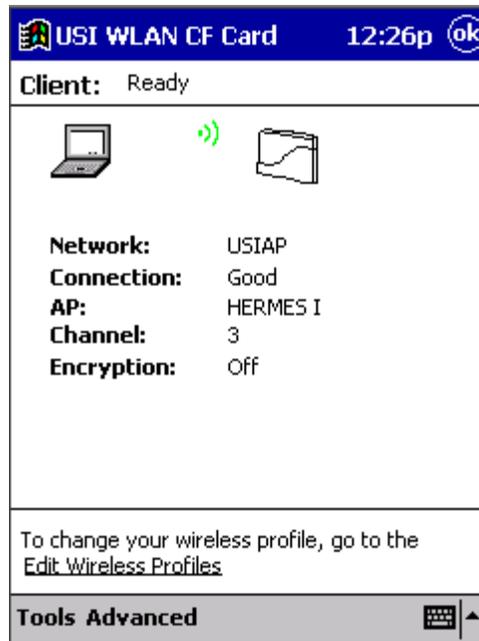


Figure 9

You can use the “Tools” pop-up menu to

- enter the Configuration profile edit screen
- see the driver and firmware revision
- enable/disable the settings “suspend while connected” and “Load/Unload automatically”
- suppress the Client Manager(hidden on the task bar)

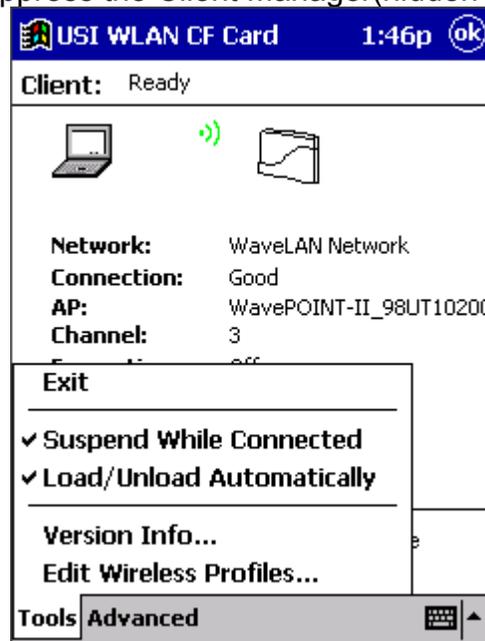


Figure 10

You can use the “Advanced” pop-up menu to

- scan the Access points in range and monitor them
- select a partner to do link-testing

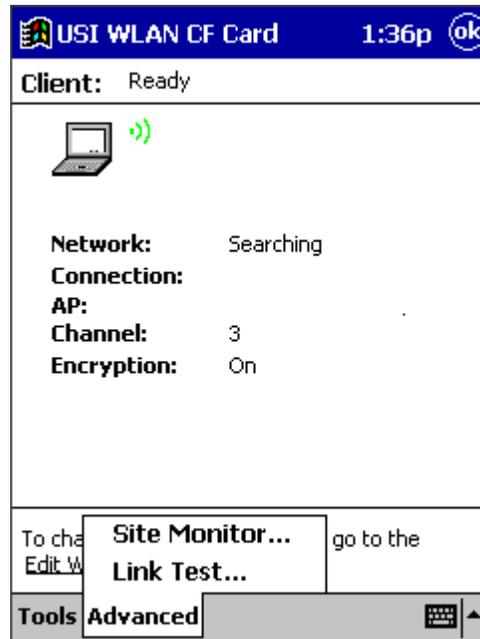


Figure 11

## 4. Card Specifications

### 4.1 Physical Specifications

<b>Form Factor</b>	CF Card Type I Extended	
<b>Dimensions</b>	52.5x42.8x5 mm	
<b>Temperature &amp; Humidity</b>		
<b>Operation</b>	0° to 60° C	Maximum humidity 95%
<b>Storage</b>	-10° to 70° C	10 to 90%(no condensation)

### 4.2 Power Characteristics

<b>Doze Mode</b>	10 mA
<b>Receive Mode</b>	180 mA
<b>Transmit Mode</b>	280 mA
<b>Power supply</b>	3.3 V

### 4.3 Networking Characteristics

<b>Compatibility</b>	<ul style="list-style-type: none"><li>• IEEE 802.11 Standard for Wireless LANS (DSSS)</li><li>• Wi-Fi (Wireless Fidelity) certified by the Wireless Ethernet Compatibility Alliance (WECA).</li></ul>	
<b>Network Operating System</b>	Microsoft Windows® Networking	
<b>Host Operating System</b>	Windows CE 3.0 & 4.0	
<b>Media Access Protocol</b>	CSMA/CA(Collision Avoidance) with Acknowledgment(ACK)	
<b>Data Rate</b>	<ul style="list-style-type: none"><li>• High</li></ul>	11 Mb/s
	<ul style="list-style-type: none"><li>• Medium</li></ul>	5.5 Mb/s
	<ul style="list-style-type: none"><li>• Standard</li></ul>	2 Mb/s
	<ul style="list-style-type: none"><li>• Low</li></ul>	1 Mb/s
	The card use an automatic Transmit Rate Select mechanism	

## 4.4 Radio Characteristics

Radio Characteristics of USI 802.11b WLAN CF Cards may vary:

- According to the country where the product was purchased.
- According to the type of product that was purchased.

Wireless communication is often subject to local radio regulations. Although “USI 802.11b WLAN CF Card” wireless networking products have been designed for operation in the license-free 2.4 GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment.

To comply with such regulations, USI 802.11b WLAN CF Cards are marketed with dedicated channel-sets with a number of factory-programmed channels identified by the following acronyms:

- ETS for countries that adhere to the regulations as defined by the European Telecommunications Standards Institute (ETSI).
- FCC for countries that adhere to the regulations as defined by the US Federal Communications Commission (FCC).
- FR for France, and
- JP for Japan.

The acronym of the channel-set supported by your card is printed on a label on the back-side of your USI 802.11b WLAN CF Card.

### Radio Characteristics USI 802.11b WLAN CF Card

R-F Frequency Band	2.4 GHz (2400-2500 MHz)	
Number of selectable sub-channels	North America (FCC)	11
	Europe (ETS)	13
	France (FR)	4
	Japan (JP)	1
	Other Countries:	FCC 11, ETS 13
Modulation Technique	Direct Sequence Spread Spectrum CCK for High & Medium Transmit Rate DQPSK for Standard Transmit Rate DBPSK for Low Transmit Rate	
Spreading	11-chip Barker Sequence	
Bit Error Rate (BER)	Better than $10^{-5}$	
Nominal Output Power	15 dBm	

<b>Range (100 bytes User Data) / Transmit Rate</b>	<b>High Speed 11 Mb/s</b>	<b>Medium Speed 5.5 Mb/s</b>	<b>Standard Speed 2 Mb/s</b>	<b>Low Speed 1 Mb/s</b>
Open Office Environment	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft.)
Receiver Sensitivity	-83 dBm	-87 dBm	-91 dBm	-94 dBm
Delay Spread (at FER of <1%)	65 ns	225 ns	400 ns	500 ns

**[Note]:**

- In **Open Office environments**, antennas can “see” each other, i.e. there are no physical obstructions between them.
- In **Semi-open Office environments**, work space is divided by shoulder-height, hollow wall elements; antennas are at desktop level.

In **Closed Office environments**, work space is separated by floor-to-ceiling brick walls.

**CAUTION:** To maintain compliance with FCC’s RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

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.

## Basic Troubleshooting

If you cannot connect your USI 802.11b WLAN CF Card to the network, the first troubleshooting hint is to verify LED activity of the CF Card . The LEDs may show the following behavior:

- Power LED on, Transmit/Receive LED off
- Power LED on, Transmit/Receive LED flickering
- Both LEDs blink once every 10 seconds
- Power LED is Flickering
- No LED Activity

If there is LED activity, run the Client Manager diagnostic tool on your station to:

- Run the Link Test to verify the quality of wireless network interface radio communications with the network.

### Power LED on, Transmit/Receive LED off

This LED status indicates normal operation:

- The USI 802.11b CF WLAN Card is powered on
- The Transmit/Receive LED indicates there is no activity on the wireless network.

The absence of activity on the Wireless Network Interface might be related to the fact that:

- You moved out of Wireless Range of the Base Station(s) that could provide access to the selected network.
- There are no Wireless Client Stations in the Wireless Range of your computer to participate in the selected Peer-to-Peer Group.
- The Base Station(s) that could provide access to the selected network has (have) a problem (e.g. power is off).

### Power LED on, Transmit/Receive LED flickering

This LED status indicates normal operation:

- The USI 802.11b WLAN CF Card is powered on
- The Transmit/Receive LED indicates activity on the wireless network.

If the radio of your USI 802.11b WLAN CF Card seems to communicate with other radio devices, but does not succeed in actually connecting to the network (i.e. the power and radio LED shows normal activity), you may need to verify whether your operating system installed the correct Network Protocol Settings.

## Both LEDs blink once every 10 seconds

This LED indicates that the USI 802.11b WLAN CF Card is powered on and working properly, but it is not able to establish a wireless connection to the wireless network.

Possible causes might be:

- Your wireless station is outside the Wireless Range of the Base Station(s) that could provide you access to the selected network.
- The Wireless Network Interface of your station has been configured with an incorrect Network Name and/or Encryption Key settings.
- By mistake you selected a configuration profile on your wireless station, that does not belong to the wireless network that you want to connect to.
- The Base Station(s) that could provide access to the selected network has (have) been configured to deny access to stations that use the value **ANY** as their Network Name.

Contact your LAN Administrator for information about the correct values of the parameter settings that apply in your network.

## No LED Activity

If there is absolutely no LED activity on the Power LED and Receive/Transmit LED of the USI 802.11b WLAN CF Card, this may be due to one of the following reasons:

- The USI 802.11b WLAN CF Card device is not properly connected to your computer.
- No driver was installed to allow communication between your computer and the wireless network interface.

## Power LED is Flickering

A flickering Power LED identifies that you enabled the Card Power Management option for the USI 802.11b WLAN CF Card of a Wireless Client Station (Advanced Settings).

# Technical Support

## **The identification of the product :**

Product Name : USI RoamUniversal 802.11b WLAN CF Card

Model Name : CF114100

Application : Handheld devices

## **Technical Contact :**

Universal Scientific Industrial Co., Ltd. ( Headquarters )

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