

## **Appendix E – Users Manual**

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# User's Guide

## **CREWAVE Wireless LAN PC Card**

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## **INFORMATION**

Congratulations on your CREWAVE Wireless LAN PC Card purchase!

If you want to install a networking system that is not only fast and powerful, but also easy to set up and simple to maintain, it is natural that you should choose a CREWAVE 11Mbps Wireless LAN PC Card.

In a short time you and those in your network will be able to share a local printer and files, access the Internet, and roam about the office-wire-free.

Installing this card allows the computer to join a wireless network based on the IEEE 802.11b Wireless LAN standard.

### **What is a Wireless LAN?**

A Wireless LAN provides the same functionality of a Wired LAN, but it eliminates the need to install networking cables and other networking equipment. Not only is a Wireless LAN easier to deploy, but it also allows for “roaming.” For example, an employee using a portable computer with a Wireless LAN PC Card, can roam from a conference room to an office without being disconnected from the network.

### **What is IEEE 802.11?**

The IEEE 802.11 specification is a Wireless LAN standard developed by the IEEE(Institute of Electrical and Electronic Engineering) committee in order to specify an over an air interface between a wireless client and a base station or Access Point(AP), as well as among wireless clients. Like other IEEE 802 families, IEEE 802.11 specification addresses both Physical(PHY) layer and Media Access Control(MAC) layer.

#### **- IEEE 802.11 Physical(PHY) Layer**

At the PHY Layer, IEEE 802.11 defines three physical characteristics for WLAN : diffused infrared, direct sequence spread spectrum(DSSS), and frequency hopping spread spectrum(FHSS). While the infrared PHY operates at the baseband, the other two PHYs operate at the 2.4GHz ISM(Industrial, Scientific, and Medical)band, which can be used for operating Wireless LAN devices without the need of end-user licenses. In order for wireless devices to be interoperable, they have to be conforming to the

same PHY standard.

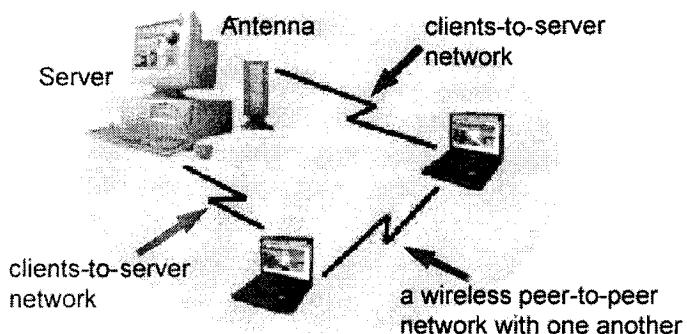
#### **- Media Access Control(MAC) Layer**

The IEEE 802.11 MAC Layer is mainly concerned with the rules for accessing the wireless medium. There are two network architectures defined : Ad-hoc Network and Infrastructure Network.

### **Which one should I use?**

#### **- Ad-hoc Networking**

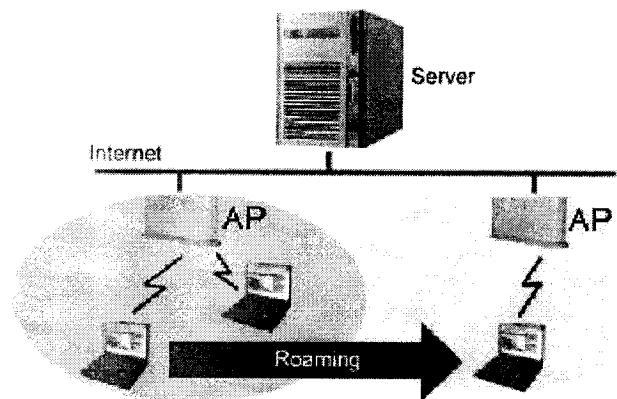
Also called “Peer-to-Peer” networking, this model is the easiest to deploy and is ideal for small offices. As a user on this type of network, you are able to share files with other employees, print to a shared office printer, and access the Internet via a shared modem. However, with Ad-hoc networking your computer is only able to communicate with other wireless computers that are within range and in your wireless workgroup.



#### **- Infrastructure Networking**

The key difference between a structured wireless network and an Ad-hoc wireless network is the addition of one extra element – an Access Point. Unlike “Peer-to-Peer” networking, where networked computers send data directly to each other, structured networked computers communicate with each other through a dedicated Access Point. All data transmitted between two computers, (clients) on the wireless network passes through the Access Point. Additionally, the Access Point on the wireless infrastructure network can provide access to an existing wired network. This link allows computers on the wireless network to access the wired network’s resources and tools, including

Internet access, email delivery, file transfer, and printer sharing.



#### \* Roaming

In an infrastructure network, this is when a wireless PC moves out of range of the previously connected Access Point and connects to a different Access Point. By physically spreading Access Points throughout the network environment, clients can always be connected regardless of where they are located or roam.

## INTRODUCTION

### CREWAVE Wireless LAN

1. Development & Manufacturer : **CREWAVE Co., Ltd.**
2. Product: 11Mbps Wireless LAN Products(PCMCIA Card): **CW-1100**

Access Point : **CW-1100AP**

#### **2.1 PCMCIA Features:**

- IEEE 802.11b Fully compliant
- High-Speed Data Rate up to 11Mbps
- Low Power Consumption
- Seamless & real time connection

#### **2.2 Access Point(AP) Features**

- Wired Network : Ethernet 10BaseT and 100BaseT
- Configuration : SNMP / USB
- Filtering : Ethernet Frame type filtering
- Antenna Type : Reverse F-Type Antenna
- Radio(Wireless) : Onboard IEEE802.11b Compliant Wireless LAN
- LED Indicator : . **Power (Red Color)**
  - . **Wired Link Tx, Rx (Green Color)**
  - . **Wireless Tx, Rx (Green Color)**

## **INSTALLATION**

### **Preparation**

#### **To achieve optimum performance of your CREWAVE Wireless LAN:**

Evaluate the area in which the network will be arranged and plan the layout accordingly. The key factors in the layout of your CREWAVE Wireless LANs are the evaluated area in which the network will be deployed and plan the layout accordingly. The key factors in the layout of your LANs are the distance between the Access Points and the spatial and structural design of the network area. Test the performance of your infrastructure network by moving the positions of the Access Points. In most buildings, wireless LAN cards maintain a range of 100 to 300 feet. This distance varies depending on the thickness and composition of the walls.

In some situations, you may need to move a computer or add an Access Point in the networked area to achieve optimum performance or range. Consider the following factors when choosing locations for the Access Points:

- Radio waves pass through walls and glass but not through metal. You may find that reinforcing metal in the structure of some concrete walls blocks the signal.
- Open spaces generally provide the best range, but surrounding large metal walls may cause reflections that reduce the data rate.
- Floors typically have steel girders and other metal material that may block radio waves from traveling between floors.

- MS-Windows 95, Windows 98/ME and Windows 2000  
(formerly known as Windows NT v5.0)
- Windows CE (version 2.0/2.11 and higher)

When re-inserting the CREWAVE Wireless LAN PC Card into your computer, these operating systems will automatically:

1. Recognize the card
2. (Re-)load the driver and activate card operation
3. Attempt to restore the network connection.

When removing the card, these operating systems will:

1. Disable the CREWAVE Wireless LAN driver and
2. Disconnect power to the PC Card slot.

You are advised to always disable the PC Card **prior** to removing the card from the PC Card slot. This will allow the Windows operating system to log off from the network server, disable the driver properly and disconnect power to the PC Card slot.

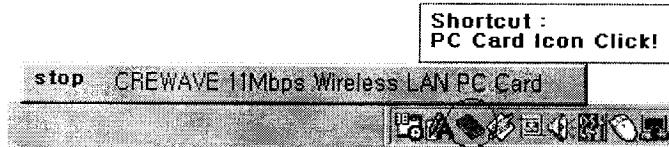
To stop using the CREWAVE Wireless LAN PC Card in Ms-Windows environments, proceed as follows:

1. Click the "Start" button on the Windows Taskbar.
2. Click on "Settings" and then "Control Panel" item.
3. On the Control Panel double-click the PC Card icon to open the PC Card (PCMCIA) properties window.
4. Select the PC Card socket that contains your CREWAVE Wireless LAN PC Card and click the "Stop" button.
5. Wait for the operating system to acknowledge that the device has been disabled and then remove the PC Card from the PC Card slot.

#### NOTE:

A shortcut to disable the PC Card is clicking once on the PC Card icon on the right side of the Windows Task bar, and select the option "Stop CREWAVE Wireless LAN PC Card".

Double-clicking the PC Card icon, will open the PC Card properties windows.



### Systems that do not support Plug & Play(PnP)

Although Windows 95/98/ME/2000 and Windows NT version 4.0 are similar in appearance, only Windows 95/98/ME/2000 support true “Plug & Play”. When your computer runs one of the operating systems listed below, neither “Plug & Play” support nor “Hot Swapping” are available for your CREWAVE Wireless LAN PC Card:

- Windows NT version 3.51
- Windows NT version 4.0
- MS-DOS

To remove your CREWAVE Wireless LAN PC Card from these systems, you are advised to:

1. Power off your computer
2. Remove the CREWAVE Wireless LAN PC Card from the PC Card slot
3. (optional) Restart the computer to proceed working with your computer without the CREWAVE Wireless PC Card.

To (re-)insert the CREWAVE Wireless LAN PC Card:

1. Power off your computer
2. (Re-)insert the CREWAVE Wireless LAN PC Card into the PC Card slot
3. (optional) Restart the computer to proceed working with your computer and the CREWAVE Wireless LAN PC Card.

## **Device Driver and Software Installation**

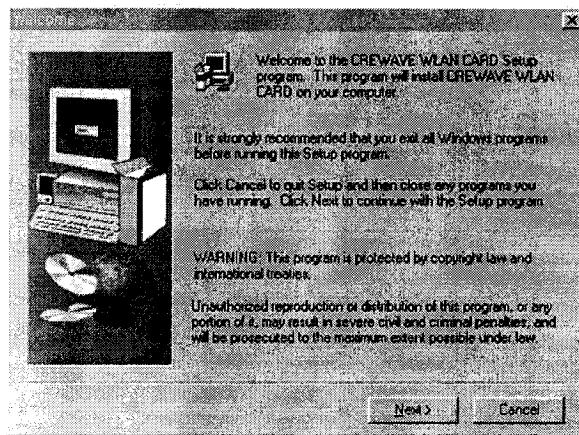
### **Installation for Windows 95(OSR2) and Windows 98/ME/2000**

#### **: Include CREWAVE Configuration**

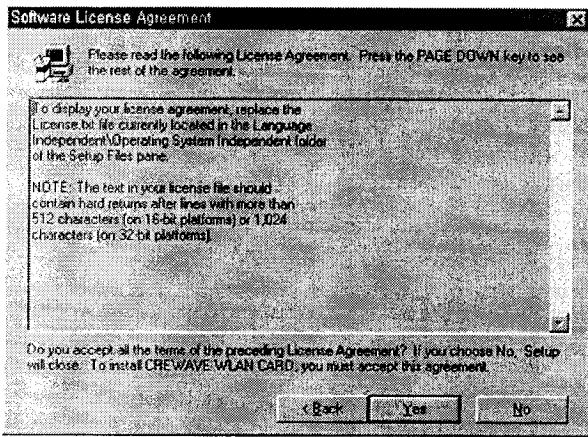
To install the CREWAVE Wireless LAN PC Card on a compute running both Windows 95(OSR2)/98/ME/2000, please follow the procedure as follows.

First.

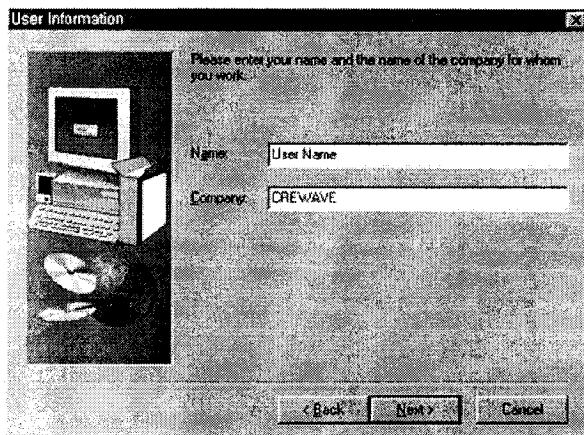
1. Power on your computer.
2. Exit all windows programs and insert the Installation CD into the CD-ROM drive of your computer.
3. The Installation CD automatically will run a Setup program corresponds with your Operating systems.
4. Click “OK”, and the **Welcome** dialog box displays.



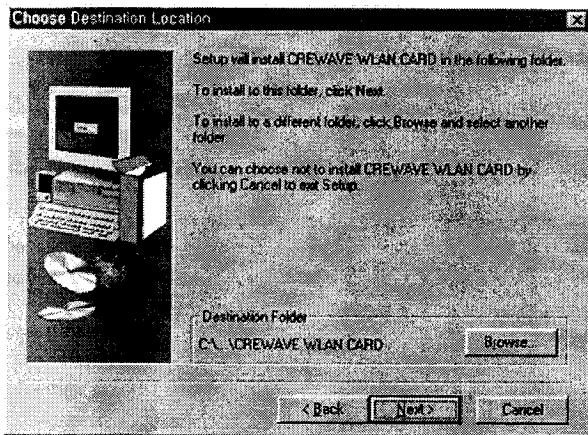
5. Accept the **License Agreement** by clicking “Yes”. If you choose No, Setup will close. To install CREWAVE Wireless LAN PC Card, you must accept this agreement.



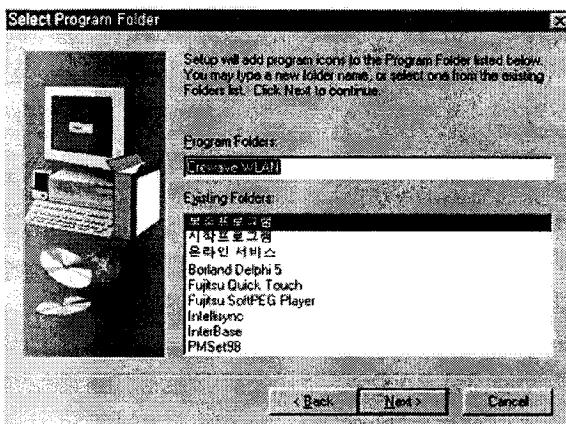
6. Enter some information in **User Information** dialog box. Enter your name and the name of the company for whom you work.



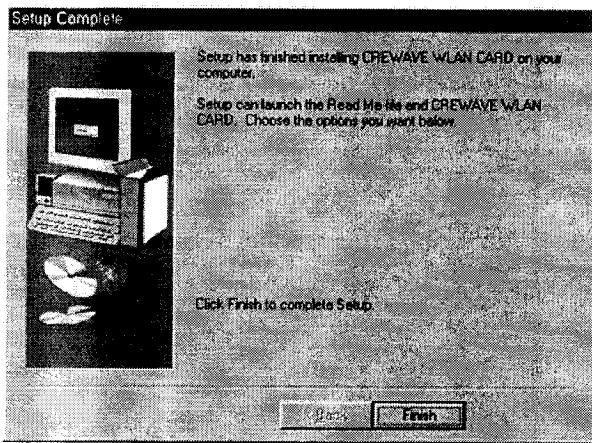
7. You can select another folder, which is where you want to install CREWAVE Wireless LAN PC Card in **Choose Destination Location** dialog box.



8. Click the Next button after you select a suitable name and list. Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folder list.



9. Windows Setup automatically will copy files and install the utility files, then click on Finish to complete the installation.



Second.

1. After the software is installed, insert the CREWAVE Wireless LAN PC Card into an available PC CARD slot.
2. Windows 95(OSR2), Windows 98/ME/2000 operating systems may detect the new hardware. Operating systems automatically will build database.
3. Move into 'My Computer' using the mouse. After click right button, select the Device manager and then Network Adapters. If you see the Yellow sign of Question-mark(?), the resources are conflicting.(Refer to the 'Troubleshooting' to solve the problem)
4. If there are nothing wrong, select Properties from the pop up menu, after right click on the Network Neighborhood.
5. Click the Network Configuration tab and then select what you want to add.(Consult with Network Administrator for normal Network)
6. A System Settings Change dialog box displays and request to restart the computer, click 'Yes' to accept.

## **Installation for Windows NT 4.0**

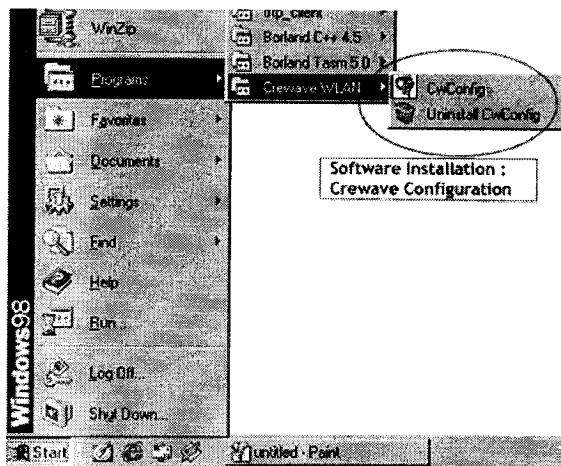
### **Note :**

**Some notebook computers for Windows NT 4.0 operating system that do not support 3.3V cards will not install your 3.3V PC Card successfully.**

1. Power off your computer and insert the CREWAVE Wireless LAN PC Card into an available PC CARD slot
2. Power on your computer.
3. Insert the Installation CD into the CD-ROM drive of your computer.
4. The Installation CD automatically will run a Setup program corresponds with your Operating systems.
5. Refer to 'Installation for Windows 95/98/ME/2000' for Installation of CREWAVE Configuration Utility.
6. Right click on the Network Neighborhood and select Properties.
7. Select the Adapter and click on Add button.
8. Since it is looking for the driver files, enter the path name D:\nt40 (if D:\ is your CD-ROM drive) and then click on 'Have Disk'. It copies the driver files.
9. You will see 'CREWAVE 11Mbps Wireless LAN PC Card' and select the correct card type and click on OK button.
10. Configure Wireless LAN Card box may appear. Set each parameter (I/O Base Address, Interrupt) for the proper system configuration set up and other parameters(network mode, SSID, and Tx rate) for the proper LAN Card configuration.
11. Click on Bindings.
12. Click on the Protocol to access the network and share the resources.
13. Select TCP/IP and you can select either DHCP or Static for the IP address. (If you select DHCP, you do need to specify the IP address. If you select the Static option, enter the IP value, Subnet masking, Gateway, and DNS values respectively. Also add the Workgroup / Domain name.)
14. After you add the TCP/IP protocol, it will ask you whether you want to restart your computer or not. Click on 'Yes' to make the changes effective. (If you encounter some problems during installation or your card is not functioning properly, please refer to the 'Troubleshooting'.)

## CONFIGURATION

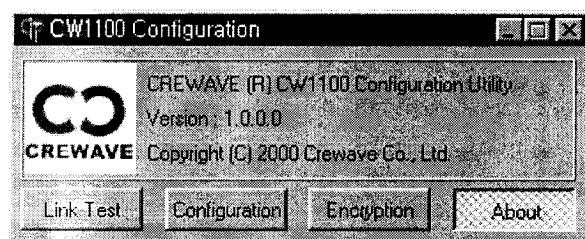
During the installation of your CREWAVE 11Mbps Wireless LAN PC Card, Configuration Utility is also installed. You can see the icon(CwConfig) on Start button. Clicking on that icon will show you the screen as shown below.



We will explain meanings of the various screen messages.

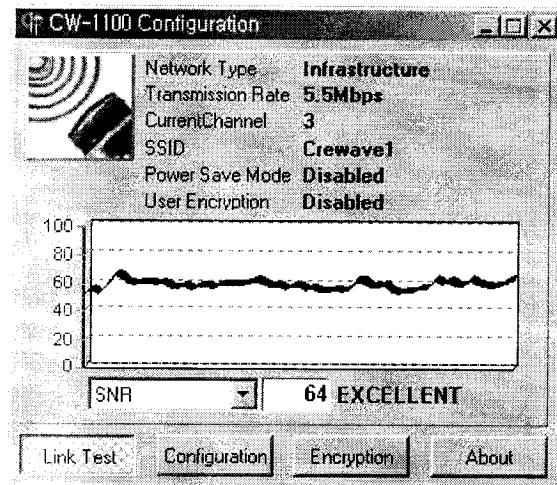
### - About

About tab show the basic default of CREWAVE Wireless LAN currently in use.



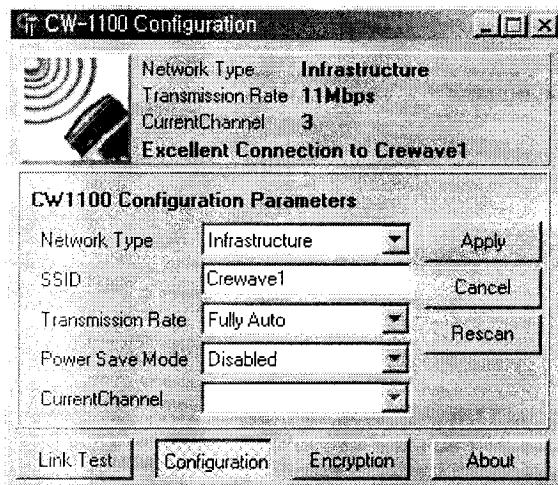
- **Link Test**

Link Test explains the properties of the channel currently in use. It also explains whether the link between the two communicating client or a client and an AP is *excellent, good, adequate or poor*.



- **Configuration**

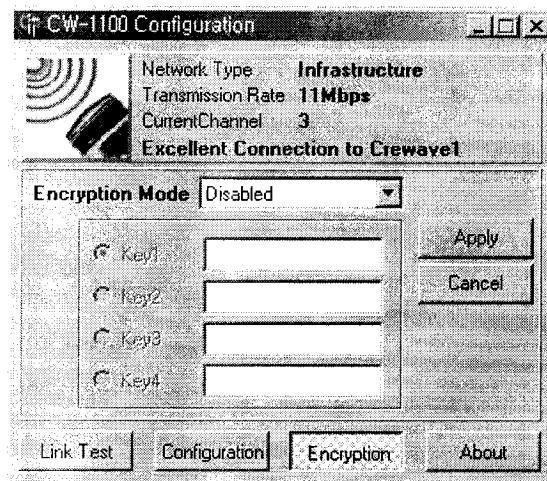
You can change the CREWAVE Configuration Utility for the suitable setting. After changing the settings in the Configuration Dialog box, click on Apply button. It takes a few seconds to set the changes that you made.



- Network Type : This describes the type of network that a client is connected. The choice is between Infrastructure and Ad-hoc modes.
- SSID(Service Set Identifier) : A Network ID unique to a network. Only clients and Access Point(AP) that share the same SSID are able to communicate with each other.
- Current Channel : Specifies the default channel(802.11b). You can change the channel number.
- Power Save Mode : You can save an electric power by this function as do not networking. (Currently, the Power Save Mode is disabled.)
- Transmission Rate : The transmission rate at which the data packets are transmitted by the client or AP.

#### - **Encryption (WEP Key)**

Encryption is a WEP(Wired Equivalent Privacy) scheme that provides the secure wireless data communications to the users. Encryption uses a 40bits key to control the network access. In order to decode the data transmission, each wireless client on the network must use the identical 40bits key.



## **TROUBLESHOOTING**

This chapter lists problems you may encounter and possible solutions during the installation of your Wireless LAN PC Card(PCMCIA).

<b>Symptom</b>	<b>Diagnosis/Remedy</b>
If you can't connect to one of the clients in the Network Neighborhood.	<p>&lt;Network Neighborhood&gt;</p> <ul style="list-style-type: none"><li>- Make sure your TCP/IP setup is correct in the Network Properties</li><li>- Make it sure that your workgroup have the same name with another clients.</li><li>- Make sure you are within range of an Access Point or client.</li></ul> <p>&lt;Generic&gt;</p> <ul style="list-style-type: none"><li>- Make it sure that all clients have the same SSID in the CREWAVE Configuration and Access Point (AP) set is correctly.</li></ul>
If you find the Yellow sign of Question-mark(?) on the adapter or PC Card socket status of the PC Card Controller	<ul style="list-style-type: none"><li>- It shows the installation is not successful. Select the adapter and click on Remove. Restart your computer after uninstallshield.</li><li>- Check if your computer has a free IRQ. If not, make an IRQ free by assigning the same IRQ to some devices, for example COM1, COM2 can be assigned same IRQ values.</li></ul>
LEDs of CREWAVE WLAN PC Card blinking.	<ul style="list-style-type: none"><li>- CREWAVE WLAN Card works fine, but did not yet succeed establishing a wireless connection with the wireless infrastructure.</li></ul>

	<ul style="list-style-type: none"><li>- Make sure you are within range of an Access Point.</li><li>- Make sure SSID is set properly and correctly. (In the same, identify your AP set)</li><li>- Make sure a resource is shared on every computer in the network.</li></ul>
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## **Limited Warranty**

### **Notice**

This Limited Warranty entitles you, the original purchaser, to the benefits listed in the CREWAVE Limited Warranty Statements from the date of purchase from a CREWAVE Authorized Reseller.

This is the only warranty statement that is relevant to original purchaser and CREWAVE expressly revokes any other statements except this Limited Warranty Statements which is enclosed with this product.

1. During the warranty period, a CREWAVE Authorized Service Provider or CREWAVE will, at no additional charge, replace defective parts with new parts performance. If, after numerous repeated efforts, the CREWAVE and/or CREWAVE Authorized Service Provider are unable to restore the CREWAVE Product to good working order, CREWAVE may, at its option replace the CREWAVE product with another CREWAVE product of equivalent functionality or configuration.
2. This warranty is contingent upon proper use in the application for which the products are intended and does not cover products which have been modified without the seller's approval or which have been subjected to unusual physical or electrical demands or damaged in any way.
3. This Limited Warranty does not extend to any CREWAVE product purchased from an unauthorized reseller.
4. All CREWAVE products are covered only by the CREWAVE Limited Warranty in the country in which they were purchased. Service for your CREWAVE product in a country other than the one in which it was purchased is available from any CREWAVE Authorized Service Provider in the country concerned, and the full cost of any service obtained(including parts)must be borne by you.

CREWAVE Co., Ltd.

Model: CW-1100

**Frequency Table for CW-1100 DSS PCMCIA LAN Adapter Card**

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472