USER MANUAL

802.11b/g PC CARD

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Chapter 1 Introduction

The PC Card complies with IEEE 802.11b and 802.11g Standard. It combines networking with high-speed Internet access that enables you to connect to the Internet anytime and anywhere.

With seamless roaming, interoperability and advanced security with WEP standard, the PC Card allows user to switch among different vendors' access points in the wireless networks, and to prevent the user from being eavesdropped.

802.11b/g			
Radio Technology	EEE 802.11b and 802.11g standard compliant		
Operating Frequency	2412 ~ 2483.5MHz for ISM band		
Spreading	IEEE 802.11b DSSS (Direct Sequence Spread Spectrum)		
	IEEE 802.11g OFDM (Orthogonal Frequency Division Multiplexing)		
Channel Numbers	11 channels for United States		
	13 channels for Europe Countries		
	14 channels for Japan		
Data Rate	802.11g: 54Mbps with fall back rates of 48, 36, 24, 18, 12, 9 and 6Mbps		
	802.11b: 11Mbps with fall back rates of 5.5, 2, and 1Mbps		
Modulation Schemes	802.11g: OFDM		
	802.11b: CCK (11 Mbps, 5.5Mbps), DQPSK (2 Mbps, 1 Mbps)		
Media Access Protocol	I CSMA/CA with ACK		
Transmitter Output	Typical 14 dBm for 54Mbps		
Power	Typical 18 dBm for 11Mbps		
Current Consumption	Transmit mode: 500 mA@11g 16dBm and 550mA@11b 18dBm		
(Typical)	Receive mode: 330 mA@11g and 280mA@11b		

1.1 Wireless LAN Feature Functions

1.2 Regulatory Notice

1.2.1 FCC Class B 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 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 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 the 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.

Notice: (1) Shielded cables, if any, must be used in order to comply with the emission limits. (2) Any change or modification not expressly approved by the grantee of the equipment authorized could void the user authority to operate the equipment.

1.2.2 Canadian Regulatory Wireless Notice

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

1.2.3 European Union Notice

Products bearing the CE marking comply with the R&TTE Directive (1999/5/EC), EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Chapter 2 Wireless LAN Installation

2.1 System Requirements

Your notebook system must have Windows 98SE, ME, 2000, or Windows XP OS installed in order to install the Wireless LAN driver and Utility so that you can use the wireless LAN card on your computer:

2.2 Installation and Uninstall Process

2.2.1 Install Wireless LAN (Windows 98/ME/2000/XP)

1. Execute the program *Setup.exe* in the CD provided. The InstallShield Wizard window appears as below. Click Next to continue.

InstallShiel	ld Wizard		
2	LAN-Express AS IEEE 8 the InstallShieldR Wizard the setup process. Pleas	02.11 Wireless LAN Setup is preparing d, which will guide you through the rest of e wait.	
InstallShie	eld Wizard		x
		Welcome to the InstallShield Wizard for LAN-Express AS IEEE 802.11 Wireless LAN The InstallShieldR Wizard will install LAN-Express AS IEEE 802.11 Wireless LAN on your computer. To continue, click Next.	
		< Back Cancel	

2. Click Browse to select the destination folder where you want to install the files. And then click Next.



3. Wait for the system to complete the installation process.



4. The Wireless LAN has been installed successfully. Remove any disk from any drives, and then click Finish to complete the installation process.



- 2.2.2 Uninstall Wireless LAN (Windows 98/ME/2000/XP)
- 1. In Control Panel, select Wireless LAN, and then click the Add/Remove button. The dialog box appears as below.



2. Select Remove, and then click the Next button to perform the uninstallation. Click OK to confirm that you want to remove the Wireless LAN.



3. Wait for the system to complete the un-installation process.



InstallShield Wizard	×
Setup Status	
LAN-Express AS IEEE 802.11 Wireless LAN Setup is performing the requested operations.	
64%	
InstallShield	
Cancel	

4. Click Finish to complete the un-Installation process.



Chapter 3 Wireless Utility and Configuration

The following sections describe the Wireless Network Configuration Utility. This utility provides quick access and friendly interface to configure the PC Card.

3.1 Windows 98/ME/2000/XP Wireless Utility

After the Wireless LAN installation has completed, a Wireless LAN Utility icon appears on the task bar of your Windows system. Click the icon; the 802.11 Wireless LAN Utility window appears as shown below. If you cannot find the icon, click Start>Program>LAN-Express AS 802.11 WLAN.

3.1.1 Card Status

🗢 802,11 Wireless LAN Utility 🛛 💽
Wireless LAN Adapter: [11] LAN-Express AS IEEE 802.11g Cardbus Adapter
Card Status Profile Site Survey About
Connecting Information
SSID: 108 Rescan
BSSID: 00-03-7F-BE-F0-F7 Current Channel: 6
Link Speed (Mbits / Sec) Throughput (Frames / Sec) Tx: 48 Rx: 54 Tx: 0 Rx: 0
Card Information
Freq. Domain : N/A IP Address : 192.168.0.3
Signal Level: 100 % Disable Radio

You can see the connection information of your PC Card as well as other information, such as Link Speed, Current Channel, Throughput, IP Address and Frequency Domain.

SSID: An acronym for Service Set Identifier. SSID is the unique name shared among all clients and access points in a wireless network. The SSID must be identical for all clients or Access Points participating in the same network. The value of SSID is case sensitive and must not exceed 32 characters. Click Rescan to scan for the specified SSID set in your profile. If the SSID is set to be ANY in your profile, the PC Card will scan for the AP in the nearby area and choose the stronger one. The Signal Level shows the quality of the wireless transmission.

🕈 802.11 Wireless	LAN Utility		
Cond Status I.s. a. 1	Wireless LAN Adapter: [11] L	AN-Express AS IEEE 802.11g Card	dbus Adapter 📃 💌
- Connecting Inform	site survey About		
SSID:	Software Radio is	s Off	Rescan
BSSID:	00-00-00-00-00	Current Channel:	0
Link Speed (Mb	its / Sec)	Throughput (Frames / Sec Tx: 0) Rx: 0
Card Information –	N/A	IP Address :	
	Signal Level:		Enable Radio

Signal Level: displays the signal level of your PC Card.

Disable/Enable Radio: Click k to disable/enable radio with this utility. Click it again to enable radio.

3.1.2 Profile

🗢 802.11 Wireless L	AN Utility				×
Card Status Profile S	Wireless LAN Adapt ite Survey About	er: [11] LAN-Ex	press AS	EEE 802.11g Cardbus Adapter	1
Profile Name	SSID	Network Type	Encry	Profile Name	
108	108	Infrastructure	Off	2 108	
👗 SQA_TRIO1	SQA_TRI01	Infrastructure	On	SQA_TRIO1	
<u>∦</u> MR814v2-B	MR814v2-B	Infrastructure	Off		
<			>	Infrastructure C Ad Hoc	
New 🔗 Modify 🦓 Delete					
s	ignal Level:	100 %		Disable Radio	

Profiles

The Profiles tab shows all the profiles you set.

Active Profile List

Select the profiles you wish to activate in the Profiles list. Use the following buttons to set the priority of the selected profiles. Click the radio button of Infrastructure or Ad Hoc to choose to connect to either Infrastructure network or Ad Hoc group, and then click Apply to activate your changes. Or click Undo to cancel the changes and return to the original status.



Add the specified profile into the Active Profile List.



Remove the selected profile from the Active Profile List.



Use these two buttons to change the scanning priorities.



Disable Radio/Enable Radio: disable/enable radio.

• New/Modify/Delete:

Click New to set up a new configuration of profile. Click Delete to delete an existing profile. Click Modify or double-click one of the profile names in the Profiles list to modify the existing profile configurations. The Profile Setting windows appears as follows.

• General

Profile : LittleGuava Profile Name: LittleGuava	
General Security IP Config	
Network Name (SSID)	LittleGuava
Network Type:	Infrastructure (Computer-to-Access Point)
	OK Cancel

 Network Name (SSID): The SSID differentiates one WLAN from another. All access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID. In the Infrastructure Network, a blank SSID field is allowed and it is translated to a null SSID. Thus, the PC Card has the capability to connect to any available access point. You can click the SSID button to view the available network. The Available SSID window appears as shown below:

SID	BSSID	Network Type
YBBUser	0A:D0:59:5B:22:24	Infrastructure
AP-600	00:03:7F:BE:F0:E5	Infrastructure
SQA_TRIO1	00:D0:59:FE:D0:05	Infrastructure
sylvan_g2	00:03:7F:E0:00:FA	Infrastructure
1030015	0A:D0:59:5B:22:57	Infrastructure
YBBUser	0A:D0:59:5B:22:59	Infrastructure
YBBUser	0A:D0:59:5B:22:15	Infrastructure
		•

2. Network Type:

Ad-Hoc - Used in a simple peer-to-peer network, it offers the file sharing capability between wireless clients without a wireless access point.

Infrastructure - The Infrastructure mode allows a wireless LAN to be integrated into an existing wired network through an AP. Infrastructure type networks also permit roaming between access points while maintain the connection to all network resources. The Infrastructure mode provides additional features, such as WEP security, power saving, and extended range.

Profile : LittleGuava				
Profile Name: LittleGuava				
General Security IP Config				
- Security Method				
C WPA	EAP TYPE :	TLS		_
C WPA_PSK				
C 802.1×	EAP TYPE:	TLS		V
C Pre-Shared Key				
None				
				Configure
			ок	Cancel

Security

To enable the security service, select one of the security methods by clicking the corresponding radio button. And then click the Configure button to configure the detailed security settings.

1. WPA

The Wi-Fi Protected Access (WPA) mode allows for authentication with networks that support the EAP-TLS or PEAP Extensible Authentication Protocol (EAP) types.

EAP TYPE – TLS

TLS Property		×
Trusted Certificate Authority —		
WPA123		•
Certificate	Selected Certific	cate Information
allen	Issue To :	allen
catherine	Issue By :	WPA123
	Expired Date :	2004/09/17
	Friendly Name :	
Server / Domain Name:	AMBIT.WPA.COM	
Login Name:	allen	
		OK Cancel

Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

Certificate - Select one certificate from the existing certificates stored in the personal certificate list of the current user.

Server / Domain Name - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

EAP TYPE - PEAP

PEAP Property	×
┌─ Trusted Certificate Autho	rity
WPA123	
User Information for MS-0	CHAP v2
User Name :	laurence
Password :	****
Confirm Password :	****
Server (Demein :	
Server / Domain .	
Login Name :	Jaurence
	OK Cancel

Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

User Name / Password - Enter the user name and password for authentication purpose.

Server / Domain - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

2. WPA-PSK

Wi-Fi Protected Access. This mode allows you to use WPA style authentication and encryption in a network that does not support the EAP/802.1x authentication.

Enter the ASCII code based secret pass phrase. The pass phrase must contain at least 8 characters, but no more than 64 characters. And then, click OK.

WPA_PSK		×				
Enter your WPA passphrase, and the minimum length is 8.						

	ок	Cancel				

3. 802.1x

This security mode allows the creation of a dynamic Wired Equivalency Privacy (WEP) key for user and/or station authentication. The LEAP authentication with a Cisco network infrastructure is included in the 802.1x mode. Other EAP types, such as EAP-TLS and PEAP are also supported.

TLS Property		×	
Trusted Certificate Authority -			
WPA123		•	
Certificate	Selected Certifi Issue To : Issue By : Expired Date : Friendly Name :	cate Information allen /VPA123 2004/09/17	
Server / Domain Name:	AMBIT.WPA.COM		
Login Name:	allen		
		OK Cancel	

EAP TYPE - TLS

Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

Certificate - Select one certificate from the existing certificates stored in the personal certificate list of the current user.

Server / Domain Name - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

PEAP Property	×
Trusted Certificate Autho	rity
WPA123	•
User Information for MS-0	CHAP v2
User Name :	laurence
Password :	******
Confirm Password :	*****
Server / Domain :	Ambit.WPA.COM
Login Name :	laurence
	OK Cancel

EAP TYPE – PEAP

Trusted Certificate Authority - Select a specific Certificate Authority who must be the Trusted Root Certificate Authority for the authentication server's certificate. Select Any to accept any certificate.

User Name / Password –Enter the user name and password for authentication purpose.

Server / Domain - Enter a domain name to only authenticate to the server in that domain.

Login Name - Enter your login name to include your account information in the authentication log file at the server side.

EAP TYPE – LEAP

Leap Property		×
User Name		
Password:		
Confirm Password:		
	OK Cancel	

User Name: Enter the user name to log into the LEAP network.

Password: Enter the password to log into the LEAP network.

Confirm Password: Re-enter the password to confirm your password.

4. Pre-Shared Key

This mode is commonly referred to as 802.11 Wired Equivalency Privacy (WEP) encryption.

Pre	-Shared Key		
	Key Format:	HEX Mode (0-9, A-F, a-f)	
	Key Index:	Key 1	
	Key 1:	****	64 bits(10 digits)
	Key 2:	****	64 bits(10 digits)
	Key 3:	*****	64 bits(10 digits)
	Key 4:	*****	64 bits(10 digits)
			OK Cancel
L			OK Cancel

Key Format: You can enter the key values in either Hex Mode or ASCII Mode. The key value is case-sensitive. The valid key values for Hex Mode and ASCII Mode are listed below.

Valid Key Value			
Hex Mode	0,1,2,3,4,5,6,7,8,9, A, B, C, D, E, F		
ASCII Mode	Numeric values in the range of "0~9",		
	Alphabetical characters in the range of "a~z", and alphabetical characters in the range of "A~Z".		

Key Index: Select the key you wish to enter.

KEY1~4: Encryption key values. The key length depends on the Key Format selected.

64 bits	5-digit keys in "ASCII Mode" or 10-digit keys in "Hex Mode".
128 bits	13-digit keys in "ASCII Mode" or 26-digit keys in "Hex Mode".
152 bits	16-digit keys in "ASCII Mode" or 32-digit keys in "Hex Mode".

5. None

Select this mode when there is no authentication or encryption enabled on the wireless LAN network.

• IP Config

The IP Config tab is hidden as default. To enable the IP Config tab, right-click the Wireless LAN button on your Windows task bar on the right hand corner of your screen, and then click IP Config on the list that appears. The IP Config tab appears as shown below.

Profile : LittleGuava
Profile Name: LittleGuava
General Security IP Config
O Get IP From DHCP Server
Using Static IP Address
IP Address: 192.168.1.19
Subnet Mask: 255 . 255 . 0 . 0
Default Gateway: 0.0.0.0
C Get DNS Automatically
Using Specific DNS
Primary DNS: 0 . 0 . 0
Secondary DNS: 0 . 0 . 0
OK Cancel

Get IP From DHCP Server: Click the radio button to use Dynamic Host Control Protocol (DHCP) to obtain the IP address. And then click the Get DNS Automatically radio button to obtain the Domain Name Server (DNS) IP address from the DHCP server automatically. Or click the Using Specific DNS radio button to specify the DNS IP address. Using Static IP Address: You can also click the Using Static IP Address radio button to specify the IP address. And then, click the Using Specific DNS radio button to specify the DNS IP address.

802.11 Wireless	L AN Utility Wireless LAN Adapter:	[11] LAN-E	Express AS IE	EE 802.11g Cardl	ous Adapter	
Card Status Profile	Site Survey About					
SSID	BSSID	СН	Encryption	Network Type	Signal	^
FWAG114_C	00:03:7F:BE:F4:49	11 (G)	On	Infrastructure	Fair	
MIS-B	00:0B:CD:59:05:0A	1 (G)	On	Infrastructure	Low	
👗 MIS-B	00:0B:CD:59:04:F7	11 (G)	On	Infrastructure	Poor	_
X MR814v2-B	00:09:5B:4D:57:6E	9 (B)	Off	Infrastructure	Good	
1 NETGEAR	00:03:7F:00:00:0E	11 (G)	Off	Infrastructure	Fair	
1 NH	00:0A:95:F4:75:37	3 (G)	Off	Infrastructure	Poor	
1 NH	00:0A:95:F4:6C:2F	3 (G)	Off	Infrastructure	Low	
SQA_TRIO1	00:D0:59:FE:D0:05	7 (B)	On	Infrastructure	Fair	
SQA_TRIO2	00:02:8A:9E:98:CB	6 (B)	On	Infrastructure	Excellent	
9 140H013AD11	00-00-59-00-00-04	11 (G)	0#	Infrastructura	Evcallant	×
Double	e click left mouse button t	to add specif	fic item to prof	ïle.		Scan
	Signal Level:	100 \$	6		Š) Disab Radi

3.1.3 Site Survey

Use the Site Survey tool to view the SSID information, such as MAC Address (BSSID), channel in use, Encryption status, network type, and signal quality.

You can add a new wireless Profile to a SSID by selecting and double-click one of the SSID in the SSID list.

3.1.4 Advance

The Advance tab is hidden as default. To enable the Advance tab, right-click the Wireless LAN button on your Windows task bar on the right hand corner of your screen, and then click Advance from the list that appears. The Advance tab appears as shown below.

🗢 802.11 Wireless LAN Utility		X
Wireless LAN Adapter	[11] LAN-Express AS IEEE 802.11g Cardbus Adapter	•
Radio Band 802.11a 802.11a 802.11b 802.11g Transmit Parameter Enable Tx Rate Control Tx Rate(802.11a): Auto Tx Rate(802.11b): Auto Tx Rate(802.11g): Auto	Adhoc Network Setting Ad Hoc Band: 11B CH: 11 802.11b Preamble Infrastructure: Short & Long Ad Hoc: Long Only Transmit Power: Full Power Power Save: Disable	Default Undo Apply
Signal Level:	100 %	Disable Radio

1. Radio Band

You can choose the Radio Band you wish to use, such as 802.11b, or 802.11g.

2. Transmit Parameter

You can configure the TX Rate of 802.11b or 802.11g by clicking the Enable TX Rate Control check box. Then choose the TX Rate for 802.11b or 802.11g.

3. Ad Hoc Network Setting

Select the band and channel you wish to use for the Ad hoc network settings. Select Auto if you do not know which channel to use. 4. 802.11b Preamble

Allows setting the preamble support to match up with the specified wireless network.

5. Transmit Power

You can select the transmit power of the PC Card from Full Power, 50%, 25%, 12% or Lowest Power according to the distance between your PC Card and the device you wish to associate with. If the device is very close to your PC Card, you can choose to use the lowest output power to conserve the battery life.

6. Power Save

This function controls whether the 802.11 power management is enabled. The Power management is disabled in Ad. Hoc mode.



3.1.5 About

The About tab provides you with the statistic value of link quality and signal strength.

1. Driver

Displays the current driver version of PC Card.

2. Utility

Displays the current wireless configuration utility version for your PC Card.

3. Network Card

Displays the MAC address of your PC Card.

Chapter 4 Glossary

Access Point - An internetworking device that seamlessly connects wired and wireless networks together.

Ad-Hoc - Ad-Hoc is a peer- to-peer wireless network without Access Point. A group of wireless clients consistent an independent wireless LAN.

Backbone - The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

BSS - Stands for "Basic Service Set." An Access Point associated with several wireless stations.

ESS - Stands for "Extended Service Set." More than one BSS can be configured as an Extended Service Set. An ESS is basically a roaming domain.

Infrastructure - An integrated wireless and wired LAN is called an Infrastructure configuration.

Roaming - A function that allows one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of a domain (an ESS, for example) while continuously connecting to the infrastructure.

Wired Equivalent Privacy (WEP) - To prevent access from the unauthorized wireless stations to the data that is transmitting through the network, the Wireless LAN card provides the WEP (Wired Equivalent Privacy) level of security that was part of the original 802.11 standard. The wireless LAN card supports both 64 bits WEP and 128 bits data encryption based on the RC4 algorithm.

SSID – SSID stands for Service Set Identifier. The SSID differentiates one WLAN from another. All access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID.