Wireless LAN 802.11g NIC Series

User's Guide

Version 1.3

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MAY 2004

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1. Introduction

Thank you for purchasing your Wireless LAN 802.11g Adapter. This Quick Installation Guide will assist you with the installation procedure.

The package you have received should contain the following items:

- Wireless LAN 802.11g Adapter
- Quick Installation Guide
- CD containing Wireless LAN Management utility, drivers and Multi-lingual User's Guide Note: if anything is missing, please contact your vendor

The CD contains drivers and Configuration Utility program that is used for managing the Wireless LAN Adapters and establishing the wireless connection with your Local Area Network.

Note: This manual is valid for all Wireless LAN 11g Series products, such as PC Card, USB, mini-USB, PCI adapter, mini-PCI...etc.

2. Wireless LAN Basics

Wireless LAN (Local Area Networks) systems offer a great number of advantages over a traditional, wired system. Wireless LANs (WLANs) are more flexible, easier to setup and manage and often more cost effective than their wired equivalence.

Using radio frequency (RF) technology, WLANs transmit and receive data over the air, minimizing the need for wired connections. Thus, WLANs combine data connectivity with user mobility, and, through simplified configuration, enable movable LANs.

With wireless LANs, users can access shared information without looking for a place to plug in and network managers can set up or augment networks without installing or moving wires. Wireless LANs offer the following productivity, convenience and cost advantages over traditional wired networks:

- Mobility Wireless LAN systems can provide LAN users with access to real-time information anywhere in their organization. This mobility supports productivity and service opportunities not possible with wired networks.
- Installation Speed and Simplicity Installing a wireless LAN system can be fast and easy and can eliminate the need to pull cable through walls and ceilings.
- Installation Flexibility Wireless technology allows the network to go where wires cannot go.
- Reduced Cost-of-Ownership While the initial investment required for wireless LAN hardware might be higher than the cost of wired LAN hardware, overall installation expenses and life-cycle costs will be significantly lower. Long-term cost benefits are greatest in dynamic environments requiring frequent moves, adds, and changes.
- Scalability Wireless LAN systems can be configured in a variety of topologies to meet the needs
 of specific applications and installations. Configurations are easily changed and range from peerto-peer to full infrastructure networks, also allow roaming over a broad area.

3. Installation for Windows platform

The following section will assist you in installing wireless LAN Adapter successfully. You will first install software (Utility) and then insert / attach the Wireless LAN Adapter to your system, and finally set the network properties to accommodate resource sharing and select the type of wireless network that you wish to install. The Wireless LAN card can easily be installed and used, without bothering to connect cables for keeping your computer to use network resources.

3.1. Installation Overview

Here are some steps you will perform in establishing your wireless network connection:

- Install the Access Point at first. AP is needed in case of Infrastructure network mode.
- Install the software using the Install CD.
- Install the Wireless LAN Card (WIRELESS LAN 802.11g Adapter).
- Install the network protocol(s) required to communicate on your network. Most likely you will need the TCP/IP protocol.

3.2. Install Procedure for Windows XP

Important Notice

In order to make right use of WPA, please ensure that your current Wireless Adapter's driver, and Wireless Utility can support it, WPA needs 802.1x authentication (when RADIUS mode is chosen), though the Operating System must also support 802.1x protocol. For Microsoft's OS family, only Windows XP has incorporated this by default. The rest of the OS must installed 3er party's client software such as Funk ODySSey.

Note: Do not insert the WLAN Adapter until you are asked to do so, failure of which may result in unsuccessful installation of your WLAN device.

- 1. Insert the given Installation CD in the CD-ROM and then click on the **Install Config Utilities.** Follow the instruction to finish the installation.
- 2. Insert your WLAN card into PCMCIA/PCI slot or USB connector of your system, and then system will detect new hardware.



Select "Install the software automatically (Recommended) ", and then click Next to continue.

Once your system detected the driver, Microsoft will show a warning message as below.



Click " Continue Anyway " for next step.

ound New Hard Please wait wh		talls the software		Ð
	Wireless Netv	work PC Card		
	\triangleright	Ð	D	
	Setting a system res case your system ne	tore point and backing u eds to be restored in the	up old files in e future.	
		K Back	<u>N</u> ext >	Cancel

After copy the file to your system, then the setup is finish.

3.3. Install Procedure for Windows 98/ME/2000

Note: Do not insert the **WLAN Adapter** until you are asked to do so, failure of which may result in unsuccessful installation of your WLAN **device**.

Please follow the following steps one by one in order to install the WLAN Adapter successfully.

- 1. Power on your computer and allow Windows 98/ME/2000 to load fully.
- 2. Be sure that the Wireless LAN 802.11g Adapter is not inserted yet.
- 3. Insert the given Installation CD in the CD-ROM and then click on the Install Config Utilities.

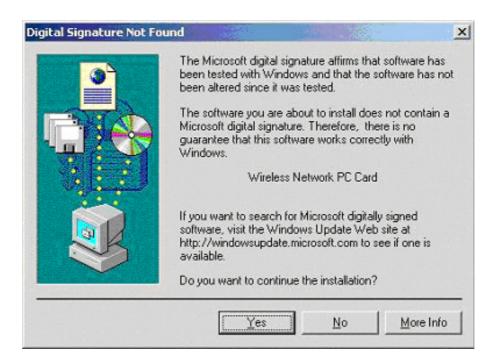


At the "Welcome" window, click Next.

4. Accept the license agreement.

stallShield Wizard			×
Lisence Agreement			N.
Press the PAGE DOWN key to see the re	est of the agreement.		
END-USER LICENSE AGREEMENT FOF WIRELESS LAN ADAPTER			<u>_</u>
IMPORTANT-READ CAREFULLY: This I ("EULA") is a legal agreement between y Corporation for the software product iden includes computer software and may incl additional computer software applications ("SOFTWARE PRODUCT"). By downlo SOFTWARE PRODUCT, you agree to b	iou (either an individua tified above, which ude associated media, s, and "online" or elect ading, installing, copyir e bound by the terms o	I or a single entity) a printed materials, ronic documentation ng, or otherwise usin of this EULA. If you	n ng the don ot
Do you accept all the terms of the preced setup will close. To install Wireless Netwo stallShield			
		Yes	

Accept the license agreement. Click Yes to accept.



Click **Yes** to finish the setup.

5. Insert / attach Wireless LAN 802.11g Adapter to your system

Windows will recognize the WLAN adapter and auto detect the driver, if the system did not find the driver automatically, please install the driver manually.

Found Ne	w Hardware
H H	Network Controller
Please v	vait



Click **Yes** to finish the installation.

 Click the right button of mouse on My Computer → Properties → Hardware→Device Manager. Check whether it has WLAN adapter in one of the sockets or not. If you find Wireless Network PC Card in one of the sockets, it means the card is detected properly.

🖳 Device Manager	
Action View ← → 📅 😭 🛃	
WIN2XPRO Gomputer Disk drives Display adapters Disp	

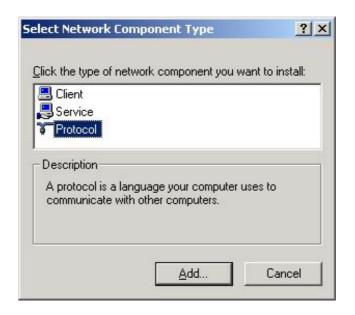
7. Click right button of mouse on the **Network Neighborhood**.

8. Select **Properties** from the pop up menu. For Windows 98 the network's properties box appears.

* For Windows ME and 2000, please select the Local Area Connection's properties to check the following menu.

. Province a	1 4 Properties	100011
neral Sharing		
onnect using:		
🞲 Wireless Netwo	rk PC Card	
		Configure
omponents checked	are used by this conne	
🖉 🔜 Client for Micr		
	er Sharing for Microsoft I	Mahworka
		VECHOINS
		VECHOIKS
		VECHOIKS
		Properties
Internet Proto	col (TCP/IP)	
Internet Proto	col (TCP/IP)	Properties
Internet Proto	col (TCP/IP)	Properties
Internet Proto	col (TCP/IP)	Properties

9. Click on the **General** tab and then click on the **Install** button. Select Network Component Type box appears. Click on the **Protocol** then click the **Add** button.



10. Select Network Protocols box appears. From the list of network protocols list, select **NetBEUI**, then click **OK**.

Select Ne	twork Protocol 🛛 🔀
¥	Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this component, click Have Disk.
Network	Protocol:
DLC Pr NetBEL Networ	alk Protocol otocol <mark>JI Protocol</mark> k Monitor Driver k IPX/SPX/NetBIOS Compatible Transport Protocol
	<u>H</u> ave Disk
	OK Cancel

- 11. The **NetBEUI** protocol is now installed. After clicking on **OK** return back to Network Component Type box.
- 12. Repeat the step 9 and 10 to add IPX/SPX protocol.

13. Click on the TCP/IP option for setting the IP address for your computer. You can select either Obtain an IP address automatically or Use the following IP address setting. If your choice is the second one then enter the IP value, Subnet masking, DNS, Domain/ Workgroup name, and Gateway Address values. After setting these parameters appropriately, click OK to return to Network Component Type and you can select the File and Printer Sharing options as well for sharing your computers resources. Click on OK.

Internet Protocol (TCP/IP) Properti	es 🤶 🕺
General	
You can get IP settings assigned auto this capability. Otherwise, you need to the appropriate IP settings.	
○ <u>O</u> btain an IP address automatica	lly
─● Use the following IP address: —	
<u>I</u> P address:	192.168.2.210
S <u>u</u> bnet mask:	255.255.0.0
Default gateway:	192.168.1.254
C Obtain DNS server address auto	matically
☐ Use the following DNS server ad	Idresses:
Preferred DNS server:	192.168.1.1
<u>A</u> lternate DNS server:	· · ·
	Ad <u>v</u> anced
	OK Cancel

14. Screen message **do want to restart your Computer** will pop up. Select **Yes**. It will shut down your computer and restart.

<u>Important</u>: In order to make sure that the changed values could take effect, please Restart your computer before continue.

Uninstall Procedure

Step 1:

If you want to uninstall the WLAN adapter, just simply click

Start Menu \rightarrow Program \rightarrow Wireless Network \rightarrow Uninstall,

it shall uninstall all related programs.



Step 2:

Restart your Computer.

4. Configuration Utility

Wireless LAN 802.11g Wireless LAN adapter uses its own management software. All functions controlled by user are provided by this application. Usually this application starts automatically,

or click 📥 icon from Start Menu to start the Utility application.

A new icon - should appear in your Icon tray. If the icon is in red, it means that Wireless LAN 802.11g NIC configuration is invalid or incomplete. Sometimes icon can be colored in yellow. This may happen when communication is defined poor connection or incorrectly.

Figure 1 Icon tray with a new icon



User can navigate through "sheets", by clicking tabs. "X" button will minimize window. To provide more information, click "More…" button. Below description explains the use and meanings of the various screen messages.



4.1 Link Information

- Connected To Network

and the state of the	Monitor
/ireless Information	
Connect To Network :	default [00:01:24:F2:EC:9B]
Network Type :	Access Point
Channel :	6
Encryption :	Off
Link Speed :	11 Mbits / sec
Signal Strength	Link Quality
PInformation DHCP Status :	Enable
DHCP Status :	Enable 192.168.2.97
Current IP :	
DHCP Status : Current IP :	192.168.2.97 255.255.255.0
DHCP Status : Current IP : Subnet Mask :	192.168.2.97 255.255.255.0 192.168.2.1

This field is used to display the current status of connection. When the state shows "Connected to Network" means normal flow of operation in Infrastructure mode. The PC is connected to access point. Networking is available.

A state of "Scanning" means that the node is searching for available access point and detecting the SSID for an available access point within range.

This field will also display an error message for some reason if the driver fails to initialize.

Network Type

- **Infrastructure** Mode The driver will scan all available channels continuously until it finds one or more Access Points that match its SSID. At that point it will try and authenticate and associate with the Access Point.
- **Peer to Peer** Mode The driver will scan for 5 seconds looking for an existing Ad Hoc network using the same SSID.

Current Channel and Transmit Rate

Shows the channel of the radio and transmit rate being currently used for an active connection. This value has no meaning when the radio is "Scanning"

- Link Quality

The Link Quality bar graph is only active when the node is in Infrastructure Mode. The bar graph displays the quality of the link between the node and Access Point.

- Signal Strength

The Signal Strength bar graph is only active when the node is in Infrastructure Mode. The bar graph displays normalized signal strength as reported by the radio, averaged over all frames over 100 bytes long that are received from the Access Point.

4.2 Availiable Networks



The Connections Tab shows current status of available APs within the network.

User may select profile or ESSID from above list, click "Connect" to connect with the AP.

Click "**Refresh**" to rescan the network, this utility with site survey function, it will detect and list all available AP's within network.

4.3 Profile Setting

Profile Setting allows user to create profiles for different network environments.

	Wireless Mon	itor
Profile Name	work Warne	Setting 2 about Vetwork Type : Access Point Channel : 1 Encryption : On IP Setting : On
Add	Edit (Delete Connect

Click "**Add**" button to create new profiles. "**Edit**" for editing current exist profile. Click "**Delete**" button if you wish to delete profiles.

- Network Type

This field allows you to select from a list of supported Network "Modes". The modes displayed will have two values: "Peer to Peer" and "Access Point".

Wireless	Monitor 🛛
Profile S	Setting
Network Name :	test
Network Type:	🗼 Access Point 🔹
Transfer Rate :	🖙 Automatic
ABC Back N	ext Exit

Peer to Peer - This is the 802.11g peer-to-peer mode of operation. In 802.11g Ad Hoc, only one wireless "cell" is supported for each different SSID. All communication is done from Client to Client without the use of an Access Point. 802.11g Ad Hoc networking uses the same SSID for establishing the wireless connection.

- Access Point This mode of operation requires the presence of an 802.11g / 802.11b Access Point. All communication is done via the Access Point, which relays packets to other wireless Clients in the BSS as well as to nodes on a wired network such as Ethernet.
- Transmit Rate The transmission rate at which client of AP transmits the data packets. You may set this to fixed 1Mbps, fixed 2 Mbps, fixed 5.5 Mbps, fixed 11 Mbps or Automatic for 802.11b's AP and fixed 6Mbps, fixed 9Mbps, fixed 12Mbps, fixed 18Mbps, fixed 24Mbps, fixed 36Mbps, fixed 48Mbps, fixed 54Mbps or Automatic for 802.11g's AP.
- **Encryption (WEP)** You may desire an additional measure of security on your wireless network, which can be achieved by using WEP (Wired Equivalent Privacy) encryption and WPA preshared key.

	Wireless Monitor	X
	Profile Setting	
	Encryption : 🙀 Off	-
2		
		1
	010101010101010	
	01010101010-010101010	ILIAN
Bac	k Next E	ixit

When an encrypted frame is received it will only be accepted if it decrypts correctly. This will only happen if the receiver has the WEP Key used by the transmitter.

Monitor	×
Getting	
🕼 Alphanumeric 🚽	
RINN KR	
\$\$(1) ▼	
ext Exit	
	(1) ↓

This panel allows to entry for 64/128-bit encryption according to WEP function select. To be written to the driver and registry, such as Hexadecimal format, each key must consist of hex digits, which means that only digit 0-9 and letters A-F are valid entries. If entered incorrectly program will not write keys to a driver.

WPA pre-shared key is one advanced security for wireless network. There are 2 types algorithm could be supported – one is TKIP, and the other is AES.

To use WPA Pre-Shared Key, enter a password in the WPA Shared Key field between 8 and 63 characters long.

To enable the used of IP Setting, please select enable.

Wireless Monitor	×
Profile Setting	
IP Setting : 📴 Enable	-
IP:x.x.x.x Subnet Mask:x.x.x.x DNS:x.x.x.x	
Back Next Exit	

The main purpose to make used of this function is to properly configure the TCP/IP setting of each wireless connection.

Please define if the current Profile IP setting will be assign by a DHCP Server or just assign by a fixed IP that is determinate by the Network Administrator.

Wireless	Monitor 🛛 🗵
Profile S	etting
DHCP Status :	🔹 Enable 💽 💌
IP Address :	Enable
Subnet Mask :	Disable
Default Gateway :	
DNS Server :	• •
IP:#.#.## Subnet Mask:#.#.#.# DNS:#.#.#.#	
Back Com	plete Exit

When the DHCP Status is Enable, the TCP/IP information will be assigned by a DHCP Server. Or otherwise please fill up with the correspondence data of the IP settings.

4.4 About



"About" tab shows the product version including the detail of Driver, Application and firmware versions. Users must use this version number when reporting their problems to technical support.

5. Troubleshooting

If you encounter any problems during the installation, or to confirm that the WLAN 11Mbps device is installed properly, please read the following troubleshooting section.

In Windows 98:

To check that the **WLAN 802.11g device** is installed properly, please do the following:

 Go to START>SETTINGS>CONTROL PANEL>NETWORK. Choose the Configuration Tab. If you find the WLAN 802.11g Adapter, it means the card is installed properly. If you see the Yellow Question-mark (?) means the resources are conflicting. (Please read further in this section for solutions.)

-or-

- Right click on My Computer and select Properties. Select the Device Manager and click on the Network Adapter. You will find the WLAN 802.11g Adapter if it is installed successfully. If you see the Yellow sign, the resources are conflicting. Click on the PCMCIA Card and then on the PCMCIA Card Service, you can see the status of the PC card. If there is a yellow sign either on the adapter or the PC card, please check the following.
 - 1. Check to see if your computer has a free **IRQ.** If not, make an IRQ free by assigning the same IRQ to some devices, for example COM 1; COM 2 can be assigned the same IRQ values.
 - 2. Check that you have inserted the right card and have installed the proper driver.

In Windows 2000:

- 1. Check the **Windows 2000 Diagnostics.** See if there is any conflict in the **resource** allocation or the **I/O Address, IRQ** allocations. If you find that the **IRQ** or **I/O Addresses** are already assigned to some other devices, you must change that value. **I/O Address** needs 40h byte length.
- 2. Go to the **Control panel.** Double click on the **PCMCIA Card** and you will see **WLAN Adapter.** Double clicking on that will show you the **Card Information**, driver name and the driver **file.** If you do not find the names, there are some problems and the driver is not installed properly. Reinstall the driver.

Note: Check the PnP BIOS setup menu and select **no** in case of the **WLAN Adapter** installation.

6. Appendix

6.1 Using WinXP Wireless Zero configuration for WPA setup

Step1:

Check and make sure that the Wireless Zero Configuration service is running. Click Start \rightarrow Settings \rightarrow Control Panel \rightarrow Administrative Tools \rightarrow Services

Ne Action View	Mulp						
Services (Local)	Services (Lecal)						
	Wereless Zero Configuration	Note //	Description	9.41.6	Startup Type	Lugon As	
		Shell Hardware Detection		Sated	Automatic	Local Bystein	
	Stop the service	Single Mail Transfer Protocol (SMTP)	Transports	Stated	Automatic	Local System	
	Restart the service	Shart Card	Managers e		Manual	Local Service	
	and a set of the set o	Shart Card Helper	Enables sa		Marcal	Local Service	
	Description:	SOP Decovery Service	Evables ds	Stated .	Monual	Local Service	
	Provides automatic configuration for the	System Event Motification	Tradis syst		Autometic	Local System	
	802-11 adapters	System Restore Service	Ferfories s	Sated	Automatic	Local System	
	and a second sec	Tadi Scheitider	Enables a	Stated	Automatic	Local System	
		TOTAL NUMBERS PRIME	Enables as	Started	Automatic	Local Service	
		Telephony	Provides T	Sated	Manual	Local System	
		S loket	Enables ar		Manual	Local System	
		Toronal Services	Alors rok	Satel	Manual	Local System	
		Theres	Provides u	Stated .	Automatic	Local System	
		Circletoruptible Power Supply	Manager a	pratice .	Manual	Local Service	
		Christensal Plug and Play Device Host	Provider 8		Manual	Local Service	
		Cibiad Manager	Manager a	Tester	Automatic	Local System	
		USE2 OG Weaters Service	Mireless L.	208180	Adventic		
		Where Authorization Service		-		Local System Local System	
			Authorizati DHOP servi	0.000	Autometic		
		Silvare CHOP Service		Stated	Autometic	Local System	
		Stiffware MAT Service	Network a	Stated	Automatic	Local System	
		Stadow Copy	Manages A	21.0	Manual	Local System	
		ByWebCherk	Enables WL	100000	Automatic	Local Service	
		Windows Audio	Manager a	Overtext	Automatic	Local System	
		Windows Image Acquation (WIA)	Provides ins		Manual	Local System	
		windows Installer	Distals, it		Manual	Local System	
		Windows Management Erstrumenta	Provides a	STALED	Autometic	Local System	
		window: Management Instrumenta			Manual	Local System	
		Windows Time	Maintaine d		Autometic	Local System	
		Wreless Zaro Configuration	Provides a	Stated	Automatic	Local System	
		WHE Performance Adapter	Provides p	1.00	Manual	Local System	
		The Moristation	Creates an		Autometic	Local System	
		World Wide Web Publishing	Provides W	Satel	Autometic .	Local System	
	Extended / Standard /						

Since WPA security standard has been defined after Windows XP lunch date, then you should also update your current Wireless Zero Configuration utility version to the latest. In order to do so, you must run the patch file which be included the CD or please visit the following website for download it.

http://www.microsoft.com/downloads/details.aspx?displaylang=en&familyid=009D8425-CE2B-47A4-ABEC-274845DC9E91

Once the above steps are complete, please proceed to the following page.

Step2:

Open the Wireless utility

Wireless Network Connection	<
The following wireless network(s) are available. To access a wireless network, select it from the list, and then click Connect. Available wireless <u>n</u> etworks:	
1590 ×	
i ap11g	
×	
This wireless network requires the use of a network key (WEP). To access this network, type the key, then click Connect.	
Network Bey:	
Confirm network key:	
✓ Enable IEEE 802.1x authentication for this network.	
If you are having difficulty connecting to a network, click Advanced.	
Advanced Connect Cancel	

Click Advanced and the following screen will appear. Over the WPA wireless Network, click Configure.

ieneral	Wireless Networks	Advanced	
1000 Contra	e <u>W</u> indows to configur able networks:	e my wireless ne	twork settings
	onnect to an available	network, click (Configure.
9	ap11g		Configure
1	NASA3F		
Å	1590		R <u>e</u> fresh
1			Move <u>up</u>
			Move <u>d</u> own
	Add	ve Pr <u>o</u> pe	

Step3:

Verify that the Network Authentication is WPA and the Data encryption is TKIP or AES. (The encryption type should match the WPA setting of your Access Point.)

ssociation	Authentication		
	Addientication		
Network <u>n</u> a	ame (SSID): 🛛 🧧	p11g	
Wireless	network key		
This netv	vork requires a key f	or the following:	
Network	Authentication:	WPA	*
<u>D</u> ata end	cryption:	TKIP	~
Network	key:		
C <u>o</u> nfirm r	ietwork key:		
Key inde;	s (advanced): 1	A V	
☑ T <u>h</u> e k	ey is provided for m	e automatically	
	a <u>c</u> omputer-to-compu points are not used	uter (ad hoc) network	; wireless

Step4:

Click Authentication tab to select EAP type. (The EAP type should match the authentication server before access the authenticated network.)

Wireless ne	etwork properties	? 🛛
Association	Authentication	
wireless Et	option to provide authenticated network acc hernet networks. IEEE 802.1x authentication for this network	ess for
EAP type:	Smart Card or other Certificate Protected EAP (PEAP) Smart Card or other Certificate	
	ticate as <u>c</u> omputer when computer information ticate as guest when user or computer inform able	
	ОК	Cancel

After clicking OK, the Wireless workstation will be able to associate with the AP previously get authenticated by an authentication Server.

Federal Communication Commission 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 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Gemtek declares that WUBR-128GW (FCC ID: MXF-U940317G) is limited in CH1~CH11 for 2.4 GHz by specified firmware controlled in U.S.A.

The user is cautioned that this device has approved only for use in laptop configurations. This equipment has been evaluated to meet the FCC RF exposure requirements (in laptop configurations) with a maximum SAR (1g) 0.163W/Kg.