AWUS036NHR Long-Range Indoor IEEE 802.11n USB Adapter

# **User Manual**



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## **Overview**

Thank you for purchasing this product. Please read this chapter to better understand your AWUS036NHR Long Range indoor USB Adapter

## Unpacking information

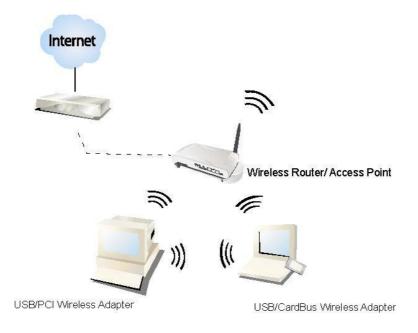
Before getting started, please verify that your package includes the following items:

- 1. AWUS036NHR Long-Range 802.11n Indoor USB Adapter
- 2. One Utility/ Manual CD
- 3. USB Cable

Alfa Network, Inc.

### Introduction to the AWUS036NHR Indoor USB Adapter

The AWUS036NHR IEEE 802.11n indoor USB adapter provides users to launch IEEE 802.11n wireless network at 150 Mbps in the 2.4GHz frequency, which is also compatible with IEEE 802.11b/g wireless devices at 11/54Mbps. You can configure this adapter with AP mode to connect/share to other 2.4GHz wireless computers or with Infrastructure mode to connect to a wireless AP or router for accessing to Internet. This adapter includes a convenient Utility for scanning available networks and saving preferred networks that users a r e usually connected with. Security encryption can also be configured by this utility.



#### **Key Features**

- Complies with IEEE 802.11b/g/n wireless standard
- Complies with Universal Serial Bus Rev. 1.0, 1.1 and 2.0 specifications.
- High Speed transfer data rate up to 150Mbps
- Support driver for Windows 2000, XP, Vista, and Windows 7.
- Supports auto-installation and diagnostic utilities.
- Support wireless data encryption with 64/128-bit WEP, WPA (TKIP with IEEE 802.1x), and AES functions.

## Installation Guide

### Software Installation

**Note:** The following driver installation guide uses Windows 7 as the presumed operation system. The procedures and screens in Windows 2000, XP are similar with Windows 7.

Insert the installation CD that came with this product to your CD-ROM drive. Please click the **"Windows 7/Vista/XP"** button from the popup menu for this product.

**Note:** If the CD-ROM fails to auto-run, please click on "**My Computer**"→ **your CD-ROM Drive** will then double-click the "**AutoRun.exe**" to start this menu.

1. Please plug in your AWUS036NHR into USB port before the installation.

Alfa Wireless	LAN Software - InstallShield Wizard
<b>Preparing</b> Please w	g Setup vait while the InstallShield Wizard prepares the setup.
	less LAN Software Setup is preparing the InstallShield Wizard, which will guide you he rest of the setup process. Please wait.
ſ	Install Adapter
	Please insert your adapter !!
	Cancel
L	
InstallShield –	
	Cancel

2. The welcome window will pop up. Click the "Next" button to proceed.

Alfa USB Wireless LAN Software	<b>—</b> ×
	Alfa USB Wireless LAN Software
	The InstallShield Wizard will install Alfa USB Wireless LAN Software on your computer. To continue, click Next.
	< Back Next> Cancel

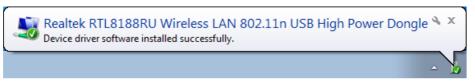
3. Installation is in progress, please wait.

Alfa USB Wireless LAN Software	<b>—</b> ×
Setup Status	24
Alfa USB Wireless LAN Software is configuring your new software installation.	
Installing	
C:\\REALTEK\11n USB Wireless LAN Utility\UPnP\avformat-52.dll	
InstallShield	
	Cancel

 Click the "Finish" button to complete driver and utility installation. Note, please insert this USB wireless adapter to your computer if you're using Windows 7, Vista, XP, or Windows 2000. If you are using Windows 98se or ME, please restart the system first before connect this wireless adapter to your computer.

omputen	
Alfa USB Wireless LAN Software	e
	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Alfa USB Wireless LAN Software. Before you can use the program, you must restart your computer. Yes, I want to restart my computer now. Yes, I want to restart my computer now. No. I will restart my computer later. Remove any disks from their drives, and then click Finish to complete setup.
	< <u>B</u> ack <b>Finish</b> Cancel

5. New hardware is found after installation is completed in Windows 7

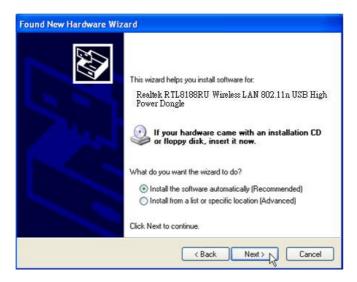


Found New Hardware Wizard in Windows XP, 2000, and Vista.

- 1. The **"Found New Hardware Wizard"** will pop up. (**Note:** This wizard won't pop up in Windows 98 and ME. The system finds the new hardware and installs the hardware automatically. Please skip the following steps)
- 2. Select "No, not this time" and click the "Next" button.

Found New Hardware Wizard					
	Welcome to the Found New Hardware Wizard				
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>				
	Can Windows connect to Windows Update to search for software?				
	<ul> <li>Yes, this time only</li> <li>Yes, now and every time I connect a device</li> <li>No, not this time</li> </ul>				
	Click Next to continue.				
	< Back Next > Cancel				

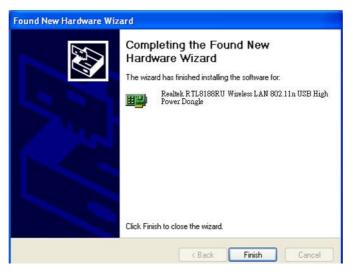
3. Select **"Install the software automatically"** and then click the **"Next"** button.



4. Please wait while installing the driver.



5. Click the "Finish" button to complete installation.



## **Management Guide**

Please read this chapter to better understand the management interface of your AWUS036H Long Range Indoor USB Adapter

## Making a Basic Network Connection

#### **Before You Start**

In the following instructions for making a network connection, we use the utility we provided to configure your wireless network settings.

**Note:** For Windows XP users that want to configure your wireless network using this Utility, please perform the following procedures to disable your native Windows XP wireless support (Wireless Zero Configuration Service)



1. Double click the icon on your desktop to start the utility.

2. Make sure that the "Windows Zero Config" checkbox is unchecked.

🔄 Windows Zero Config

#### Ad-Hoc Mode

An Ad-Hoc mode wireless network connects two computers directly without the use of a router or AP. It is also known as a peer-to-peer network. For example, we can install this wireless adapter to two computers respectively. The communication between the two computers is an Ad-Hoc mode network.



#### Ad-Hoc Mode

#### To use this adapter in Ad-Hoc Mode

- 1. Double click the icon on your desktop.
- 2. Click the "Available Network" button to scan available wireless network adapters. Double click on the network adapter that you are going to connect to.

General	Profile	Available	Network	Adv	/anced	Status	Statistics	Wi-Fi Protect Setup	
Available Network(s)									
SSID	)		Chan	nel	Encry	ption	Network	Authentication	Signal
N <sub>∞</sub>	ANUAL			1	None		Unknowr	1	100%
1 <sup>20</sup> w	rill			1	TKIP/	AES	WPA Pre	-Shared Key/	96%
1 <sup>0)</sup> ZZ	2			1	None		Unknowr	1	86%
1 <sup>0)</sup> C	well			6	TKIP/	AES	WPA Pre	-Shared Key/	78%
1 <sup>0</sup>	ASER			6	WEP		Unknowr	1	80%
<u>(</u> С)м	ikroTik			6	None		Unknowr	1	100%
1 <sup>0</sup> R	TL8186-G	W		11	None		Unknowr	1	56%

3. Click the OK button to confirm that you are connecting to an open wireless network.



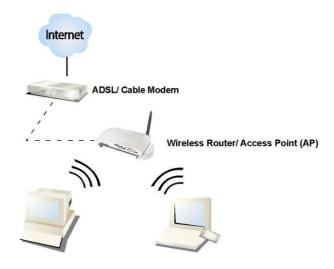
4. Click OK to add this network into the profile list.

Note: This example is an open wireless network. If you are going to connect to a Wireless adapter with security protection, you will have to configure the encryption settings in this profile to be corresponding to the other wireless adapter. Please click on the "Network Authentication" drop list to select an authentication method, and then select a "Data encryption" type. Fill in each required blanks and click "OK".

Wireless Network Properties:
$\begin{tabular}{l} \hline \hline & \hline \\ \hline$
Network Name(SSID): MANUAL
Channel: 1 (2412MHz) 🔻
Wireless network security
This network requires a key for the following:
Network Authentication: Open System 🔻
Data encryption: Disabled
ASCII PASSPHRASE
Key index (advanced): 1
Confirm network key:
<u>OK</u> <u>C</u> ancel

#### Infrastructure mode

An Infrastructure Mode network contains at least one wireless client and one wireless AP or router. This client connects to Internet or intranet by communicating with this wireless AP.



Infrastructure Mode

#### To use this adapter in Infrastructure Mode:



- 1. Double click the icon on your desktop.
- 2. Click the "Available Network" button to scan available access points. Double click on the AP that you are going to connect to.

A٧	ailable Network(s)			
	SSID	Chan	Encrypt	Network Authenticati
	👗 WLAN-11b-GW	1	None	Unknown
	🕻 default 📐	11	None	Unknown
	N			
	<			>

3. Click the OK button to confirm that you are connecting to an open wireless network.

Unsecu	red network
(į)	You are connecting to the unsecured network " default ". Information sent over this network is not encrypted and might be visible to other people.
	OK Cancel

4. Click **OK** to add this network into the profile list.

Wireless network properties	×
Profile Name: default	
Network Name(SSID): default	
This is a computer-to-computer(ad hoc) network; wireless	
access points are not used. Channel 11 (2462MHz) 🗸	
Wireless network security	802.1x configure
This network requires a key for the following:	EAP TYPE : MD5
Network Authentication: Open System	Tunnel :
Data encryption: Disabled	Username :
ASCII Passphrase	Identity :
Key Length: 64 Bits 💟	Password :
Network key:	Certificate :
Confirm network key:	
Key index (advanced): 1	
OK Cancel	

#### Note:

This example is an open wireless network. If you are going to connect to an AP with security protection, you will have to configure the encryption settings in this profile to be corresponding to your AP. Please click on the **"Network Authentication"** drop list to select an authentication method, and then select a **"Data encryption"** type. Fill in each required blanks and click **"OK"**.

### Introduction to the Wireless LAN Utility

**Note:** This management instruction uses Windows 7 as the presumed operation system. Some functions are not supported in Windows 98se or Windows ME.

#### Starting the Wireless LAN Utility

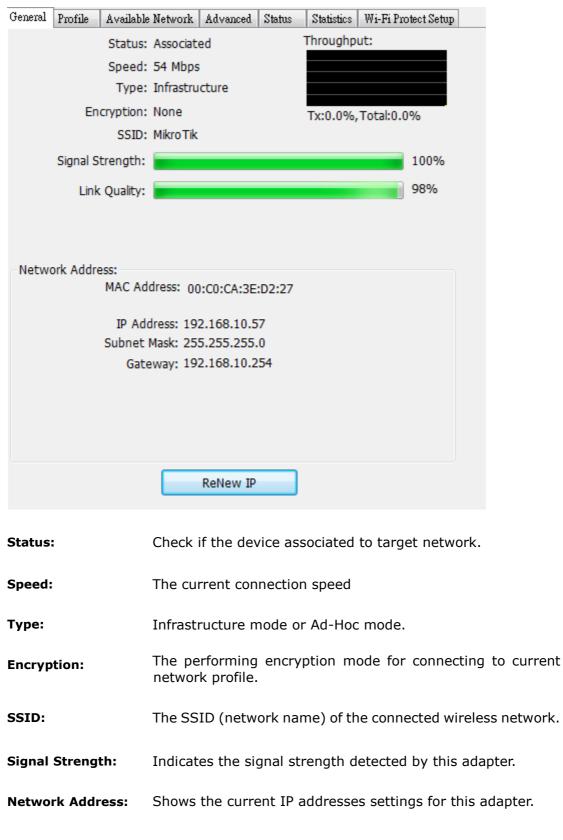
UOU.	
VU/	
<b>GIN A</b>	

Double click the shortcut on your desktop. The Wireless LAN Utility will pop up. You may click on the tabs above to configure this adapter. The checkboxes below provide the following functions:

Show Tray Icon	Check this checkbox to show the utility icon on your system tray, which is in the notification area at the lower-right corner of the windows desktop. You may also uncheck it to remove the utility icon from system tray.
<b>Windows Zero Config</b> (on Windows XP)	Uncheck this checkbox to use native Windows XP wireless support (Wireless Zero Configuration Service) instead of using this utility to configure your wireless network.
Radio Off	Check this checkbox to prevent this adapter form transmitting or receiving signals. Uncheck it to communicate.
Disable Adapter	Check this checkbox to disable this wireless adapter.
	Check this checkbox to disable the Virtual Wifi Adapter on Windows 7

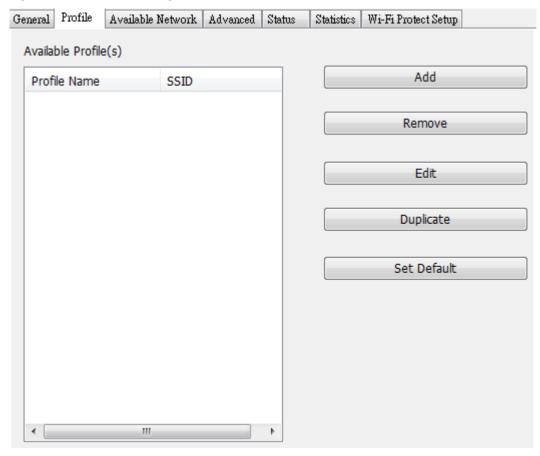
#### General

After starting the utility, the general page pops up This **General** tab and provide the information of your current wireless network connection. You may click the **Renew** button to refresh those listed information.



#### Profile

The **Profile** tab lists the preferred connections. You can click the buttons on the right-hand side to configure each connection.



Add Click this button to add a connection profile for this adapter.

- **Remove** To remove a connection profile, click this profile on the profile list and click this button to delete it.
- **Edit** To modify the configurations for a profile, click this profile on the profile list and click this button to edit.
- **Duplicate** To make a copy of a profile, click the profile that you would like to have copied, and click this button to copy it.
- **Set Default** To select a profile as your default wireless connection, select the profile on the list and click the Set Default button. You may also double click on each profile to select it as your default wireless connection.

#### **Available Network**

The available tab lists the reachable wireless network for the adapter.

vailable Network(s)	)					
SSID	Chann	el	Encryption	Network Authentication	Signal	
1) ALFA_AP		1	None	Unknown	84%	1
🗞 MANUAL		1	None	Unknown	92%	1
🔊 will		1	TKIP/AES	WPA Pre-Shared Key/	100%	1
1 <sup>30</sup> Cwell		6	TKIP/AES	WPA Pre-Shared Key/	76%	1
LASER		6	WEP	Unknown	82%	1
🕄 Mikro Tik		6	None	Unknown	100%	1
•	m					Þ
	Refresh			Add to Profile		

**Refresh** Click this button to rescan available networks around the adapter.

Add to Profile To add an available Network to your profile list, select an available network and click this button to add.

#### Advanced

This Advanced tab provides advanced configurations to this adapter. Every modification in this tab will be performed after clicking the **Apply** button. To restore the default settings of the advanced tab, click the **Set defaults** button to perform restoring.

General	Profile	Available Network	Advanced	Status	Statistics	Wi-Fi Prote	ect Setup	
P No Mir Ma	ı	/e		256				2432
	ss Mode 802.11b,	/g 🔻		0		Threshold		2432
· · · ·	rel Plan FCC	•						
	Se	et Defaults			App	oly		

Power Save				
None	sable Power saving function.			
Min	Minimum power consumption			
Max	Iaximum power consumption			
Fragment Threshold				
The maximum size of a packet that is going to be segmented and transmitted. Select the size from 256 to 2432(default) bytes.				
RTS Threshold				
Select the RTS Threshold form 0 to 2432(default)				
Wireless Mod	e			
802.11g/b	Connect to a 802.11g/b network (2.4GHz/54Mbps)			
802.11b	Connect to a 802.11b network (2.4GHz/11Mbps)			
802.11g/n	Connect to a 802.11b/g/n network (2.4GHz/150Mbps)			

#### Status

This tab shows the current connection status of this adapter.

General	Profile	Available Network	Advanced	Status	Statistics	Wi-Fi Protect Setup	
	Ma	nufacturer			Re	altek	
	ND	IS Driver Version			6.1	316.1209.2009	
	Sh	ort Radio Header			Ye	s	
	En	cryption			Dis	abled	
	Au	thenticate			Ор	en System	
	Channel Set				FC	C	
	MA	C Address			00	:C0:CA:3E:D2:27	
	Data Rate (AUTO)				54	Mbps	
	Cha	annel (Frequency)			6 (	2437 MHz)	
	Sta	atus			As	sociated	
	SS	ID			Mi	roTik	
	Ne	twork Type			Inf	rastructure	
	Po	wer Save Mode			No	ne	
	Ass	sociated AP MAC			00	:0C:42:2D:60:8B	
	Up	Time (hh:mm:ss)			0:0	)6:43	

#### **Statistics**

See Statistics tab to show the transmission activity record. Clicking the **"Reset"** button recounts the values from zero.

General	Profile	Available Network	Advanced	Status	Statistics	Wi-Fi Protect Setup	
	Coun	ter Name				Value	
	Tx O	к		480			
	Tx Error					0	
	Rx O	к				721	
	Rx Pa	acket Count				721	
	Rx Retry					22	
	Rx IC	V Error				0	
	_						
	_						
	_						
			Res	et			

## Appendix

## RT-Set Setup Wizard

For Windows users to connect to a wireless network easily, we also provide the RT-Set setup wizard to help users set their preferred wireless network step by step. You can configure your wireless network via this RT-Set setup wizard in the following two modes:

**Station mode (infrastructure):** Select this mode to connect to the AP (access point) in your LAN.

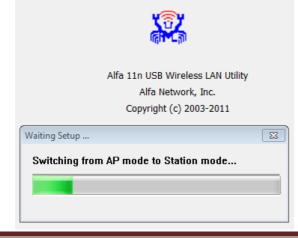
**AP mode:** Select this mode to perform this adapter as an AP (access point).

#### Connect to a wireless network in infrastructure mode

1. To connect this adapter to an AP, select the **"Station"** from the drop down menu to proceed.

nocccc										
🔏 Alfa 11n USB ۱	Wireless L	AN Utility								-
Refresh(R) Mo	de(M) A	bout(A)								
🖃 🚽 MyC 🗸	Station		le	Available I	Network	Advanced	Status	Statistics	Wi-Fi Protect	Setup
	Access F	oint		Status:	Not As	ociated				
			-	Speed:	N/A					
				Type:	N/A					
			E	ncryption:	N/A					
				SSID:						
		Sig	nal	Strength:						
			Lie	nk Quality:						
			-	in Quality.						
		Network	Add							
				MAC Ad	dress: 0	0:C0:CA:50	):6D:99			
				TP Add	dress: 0.	0.0.0				
				Subnet						
					eway:					
					ſ	0.01	ew IP	_		
					l	ReN	ew IP			

2. Switch to AP mode is in process.



🞇 Alfa 11n USB Wireless LA	N Utility	- • •
Refresh( <u>R</u> ) Mode( <u>M</u> ) Al	out( <u>A</u> )	
B. S MyComputer	General Profile Available Network Advanced Status Statistics W	/i-Fi Protect Setup
Realtek RTL818	Status: Not Associated	
	Speed: N/A	
	Type: N/A	
	Encryption: N/A	
	SSID:	
	Signal Strength:	
	Link Quality:	
	Network Address:	
	MAC Address: 00:C0:CA:50:6D:99	
	IP Address: 0.0.0.0	
	Subnet Mask: 0.0.0.0	
	Gateway:	
	ReNew IP	

3. AWUS036NHR is now in AP mode and ready for configuration.

## Use this adapter as an AP

1. To use this adapter as an AP (access point), use drop down menu to select the "Access Point" mode to proceed.

🚜 Alta 11n USB Wireless LAN Utilit	y	- • ×
Refresh(R) Mode(M) About(A)		
	anced Statet co ICS	
Access Point		
· Accession		
	SSID: ALFA-LAB_AP	
	BSSID: 00:C0:CA:50:6D:99	
	Association Table	
	ALD NAC Address Life time	
	Config	
<		
Show Tray Icon	🔄 Disable Adapter	Close

2. Switch to AP mode is in process.

	Alfa 11n USB Wireless LAN Utility
	Alfa Network, Inc.
	Copyright (c) 2003-2011
aiting Setup	[
Switching from	n Station mode to AP mode

3. AWUS036NHR is now in AP mode and ready for configuration

🞇 ALFA Wireless LAN Utilit	у	
Refresh( <u>R</u> ) Mode( <u>M</u> ) Al	bout( <u>A</u> )	
MyComputer	General Advanced Statistics ICS	
	SSID: ALFA-LAB_AP BSSID: 00:12:CF:12:34:56 Association Table AID MAC Address Life Time	
	Config	
< Ⅲ	Disable Adapter	

## AP mode management guide

#### General

After configuring the adapter in AP mode, this **"General**" page shows up, which shows the general information of this AP.

SSID:	The SSID (network name) of the wireless network constructed by this AP.
BSSID:	The MAC address of this AP
Config:	Click this button to change configurations to this AP
Association Table:	Shows the information of the devices that connects to the AP including their MAC addresses and the time that they connected with this device.

🧱 ALFA Wireless LAN Utilit	у	
Refresh( <u>R</u> ) Mode( <u>M</u> ) Al	bout( <u>A</u> )	
B. VyComputer	General Advanced Statistics ICS	
Realtek RTL818		
	SSID: ALFA-LAB_AP	
	BSSID: 00:12:CF:12:34:56	
	Association Table	
	AID MAC Address Life Time	
	Config	
Show Tray Icon	Disable Adapter	Close
Radio Off		

#### Advanced

Beacon Interval:	Define the interval between beacons from $20{\sim}1000$
DTIM Period:	Set the DTIM period between 1~255
Preamble Mode:	Click the drop list to select the preamble to be long, short or auto
Set Defaults:	Click this button to restore the settings above to default
Apply:	Click this button to execute changes.

🞇 ALFA Wireless LAN Utili	ty	
Refresh( <u>R</u> ) Mode( <u>M</u> ) A	bout( <u>A</u> )	
Refresh(R) Mode(M) A	bout(A)         General         General         Beacon Interval         100         DTIM Period:         3         Preamble Mode         Short	
< III +		
Show Tray Icon Radio Off	Disable Adapter	Close

#### Statistics

The **"Statistics"** tab shows the transmission activity record. Clicking the **"Reset"** button and recounts the values from zero.

😹 ALFA Wireless LAN Utility	<i>,</i>	
Refresh(R) Mode(M) Ab	out( <u>A</u> )	
B	General Advanced Statistics ICS	
Realtek RTL818		
	Counter Name	Value
	Tx OK	9948
	Tx Error	0
	Rx OK	14981
	Rx Packet Count	14981
	Rx Retry	3151
	Rx ICV Error	0
		_
	Reset	
<		
Show Tray Icon	Disable Adapter	Close

ICS (Internet Connection Sharing)

This page allows users to select the adapter to connect to the public network. Please click on the device that are used for connecting to the public network and click the "Select" button, and then click the "Apply" button to execute.

🚜 ALFA Wireless LAN Utilit	ty 🕞 🗖 💌	
Refresh(R) Mode( <u>M</u> ) About( <u>A</u> )		
MyComputer     Realtek RTL818	General Advanced Statistics ICS Setting Internet Connection Sharing (ICS)	
	me Device Name	
	Area Connection Realtek RTL8168B/8111B Family PCI-E Gigabit Ethernet NIC	
	4 III +	
< III >	Public Network	
Show Tray Icon Radio Off	Disable Adapter	

## **FCC Certifications**

#### 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.

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.

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.

#### **IMPORTANT NOTE:**

#### FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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

IEEE 802.11b/g or 802.11n operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.