# **AW-NU182H**

## IEEE 802.11b/g/n 2x2 USB Half-Mini-Card Wireless Module

**User's Manual** 

### I. Introduction

### i. Overview

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g/n 2x2 USB Half-Mini-Card wireless module ---AW-NU182H. The AW-NU182H USB Half-Mini-Card wireless module is a highly integrated wireless local area network (WLAN) solution to let users enjoy the digital content through the latest wireless technology without using the extra cables and cords. It enables a high performance, cost effective, low power, compact solution that easily fits onto one side of a USB Half-Mini-Card.

Compliant with the IEEE 802.11b/g/n standard, the AW- NU182H uses Direct Sequence Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM), BPSK, QPSK, CCK and QAM baseband modulation technologies.

A high level of integration and full implementation of the power management functions specified in the IEEE 802.11 standard minimize system power requirements by using AW- NU182H.

### Longer Range and Faster Speed

Comparing to 802.11g technology, 802.11n standard make big improvement on speed and range. It Increases wireless range by up to 2 times and reduces dead spots in coverage area. The data rate can up to 300Mbps data rate.

#### ii. Features

- USB Half-Mini-Card.
- Compliant with IEEE802.11n standard
- 4 2 antennas to support 2(Transmit) × 2(Receive) technology
- High speed wireless connection up to 300Mbps
- Low power consumption and high performance
- Enhanced wireless security

#### iii. Product Review

When the USB wireless module is transmitting data through connection, LED indicator will blink.

1. Connection Mode

◎Infrastructure Mode

Infrastructure mode needs an access point to establish the network, which can provide wireless accesses within valid range for users to communicate with others or transmit data with a wired network. There are several benefits of Infrastructure networking:

 $\sqrt{\text{Roaming: a wireless LAN enabled computer can physically move from the operating range of one access point to the other without losing connection. There is a quick association made between new access point and wireless device as the computer traverses from the coverage of one access point to another.$ 

 $\sqrt{\text{Range Extension: each wireless LAN enabled computer within the range of access point can communicate with other wireless LAN enabled computers within the effective range from the access point.$ 

 $\sqrt{}$  Wired to wireless LAN connection: the access point will establish a bridge between wireless LAN and other wired counterparts.



#### $\bigcirc$ Ad-hoc Mode

The difference between Ad-hoc mode and Infrastructure mode is that Ad-hoc mode does not need the access point or router. When you use this mode, your computer will act as a server within the valid range and connect directly to others in the same LAN workgroup.



### Ad-hoc Mode

It is recommended to choose this mode when there is no access point showed on your wireless network.

### II. Installation

### i. System Requirements

Before you install AW-NU182H, please make sure your system meets the following requirements.

\*Laptop with mini PCI-E slot (slot support USB D+ D-)

\*Minimum of 64MB system memory

\*Operating system: XP/Vista/Win7

\*An optical drive/CD-ROM for utilities and driver installation

### ii. Hardware Installation

- 1. Find an available mini PCI-E port (slot support USB D+ D-) on your laptop.
- 2. Install AW-NU182H Wireless USB Module into laptop PCI-E slot.

### iii. Operation Range

The operating range of AW-NU182H varies from the working environment. However, this device made improvement on speed and range, which also reduced dead spots in coverage area. AW-NU182H is two times wider than previous wireless products.

By default, this USB wireless half size mini card will automatically adjust the data rate. The transmission speed may vary according to the environment. The closer the wireless stations are the better the signal and transmission speed they will receive.

#### iv. Setup: Windows XP OS

If your computer is running a Windows operating system, it will automatically detect the AW-NU182H after the system boots up and displays a "Found New Hardware Wizard" window. Please click [Cancel] and proceed with the following steps.

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). Read our privacy policy		
	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> <li>Click Next to continue.</li> </ul>		
	< Back Next > Cancel		

1. Find out the Driver, and launch the Setup Wizard



### 2. Please wait few seconds for wizard to prepare installation

Azurewave Wireless LAN -	InstallShield Wizard	
Preparing Setup Please wait while the InstallSh	ield Wizard prepares the setup.	
	Azurewave Wireless LAN Setup is preparing the InstallShield Wizard, which will guide y through the rest of the setup process. Please wait.	vou
InstallShield		Cancel

### 3. Please select click [Install] to proceed

Azurewave Wireless LAN - In	stallShield Wizard	$\mathbf{X}$
Ready to Install the Program The wizard is ready to begin inst	allation.	
	Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit th wizard.	ė
InstallShield	< <u>B</u> ack Install Cancel	

### 4. The Wizard is running installation

Azurewave Wireless LAN - I	nstallShield Wizard	×
Setup Status		
	The InstallShield Wizard is repairing Azurewave Wireless LAN	
InstallShield	Cancel	

### 5. Please wait few seconds for Wizard to setup



### 6. When it is completed, please click [Finish]

Azurewave Wireless LAN -	InstallShield Wizard
	InstallShield Wizard Complete
	The InstallShield Wizard has successfully installed Azurewave Wireless LAN. Click Finish to exit the wizard.
InstallShield	< Back Finish Cancel

9. When the process is finished, the system will show a message of "Found New Hardware"



### v. Setup: Windows Vista OS

Please follow the steps to complete installation.

### 1. Launch the setup driver

And the series of the second					
suments sures sic ently Changed rches	<ul> <li>_setup.dll</li> <li>data1</li> <li>data1.hdr</li> <li>data2</li> <li>ISSetup.dll</li> <li>layout.bin</li> <li>setup</li> </ul>	5/18/2006 12:21 AM 7/10/2007 5:14 PM 7/10/2007 5:14 PM 7/10/2007 5:14 PM 7/10/2007 5:14 PM 7/10/2007 5:14 PM 5/25/2006 1:10 AM	Application Extens Cabinet File HDR File Cabinet File Application Extens BIN File Application	365 KB 1,059 KB 31 KB 31,009 KB 540 KB 1 KB 445 KB	
	<ul> <li>setup</li> <li>setup.inx</li> <li>setup.isn</li> </ul>	7/9/2007 5:28 PM 7/10/2007 5:14 PM 5/17/2006 3:44 AM	Configuration Sett INX File ISN File	1 KB 254 KB 52 KB	

2. When you see the permission dialogue box, please click [Continue]



### 3. Now the Wizard is preparing installation

Azurewave Wireless LAN - InstallS	hield Wizard	
Preparing Setup Please wait while the InstallShield	d Wizard prepares the setup.	
	Azurewave Wireless LAN Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.	
InstallShield		Cancel

### 4. Please click [Install] to proceed

Azurewave Wireless LAN - InstallShi	eld Wizard 💽		
Ready to Install the Program The wizard is ready to begin installation.			
	Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.		
InstallShield	< Back [Install] Cancel		

### 5. The system is process installation

Azurewave Wireless LAN - InstallShield Wizard		
Setup Status		
	The InstallShield Wizard is installing Azurewave Wireless LAN	
InstallShield		ncel

### 8. When the setup is completed, please click [Finish]

Azurewave Wireless LAN - InstallSh	ield Wizard
	InstallShield Wizard Complete
	The InstallShield Wizard has successfully installed Azurewave Wireless LAN. Click Finish to exit the wizard.
InstallShield	< <u>B</u> ack Finish Cancel

### III. Network Connection

### i. For Windows XP OS

Please see the following steps to setup network connection for Windows XP.

1. Find the network icon on the desktop shortcut and right-click on it. Choose "View Available Wireless networks"



2. You will see several options, please select one and click [Connect]



3. Please wait for few seconds to let system connecting to selected wireless network



4. You may need to type the network key when it is required

Wireless Network Conne	ection	×
The network 'AzureWave' rec network key helps prevent ur Type the key, and then click	quires a network key (also called a WEP key or WPA key). nknown intruders from connecting to this network. Connect.	A
Network key:	••••	
Confirm network key:	••••	
	Connect Cancel	

5. Now the selected wireless network is connected

(1) Wireless Network Connect	ion 6	
Network Tasks	Choose a wireless network	
🕵 Refresh network list	Click an item in the list below to connect to a wireless network in information.	a range or to get more
Set up a wireless network for a home or small office	((o)) AzureWave	Connected 👷
	Security-enabled wireless network	
(i) Learn about wireless	Security-enabled wireless network	
networking	((Q)) IAPO-G54	-0
preferred networks	Security-enabled wireless network	•000U
Change advanced settings	((p)) Unsecured wireless network	
		Connect
		Connect

6. You can check the connection status by clicking [Status] in the pop-up dialogue



7. Here is the wireless network connection status

<sup>((†))</sup> Wireless Netwo	rk Connection 6 Status 🛛 🛛 🛛 🔀
General Support	
Connection	
Status:	Acquiring network address
Network:	AzureWave
Duration:	00:01:54
Speed:	54.0 Mbps
Signal Strength:	atti
Activity	
	Sent — Vertician Received
Packets:	9   0
Properties	Disable View Wireless Networks
	Close

### ii. For Windows Vista OS

Following are the instructions to setup wireless connection for Windows Vista.

1. Right-click on the network icon located on desktop shortcut. When you see the dialogue, please click [Connect to a network]



2. Choose wireless network within your range and click [Connect]

🌀 😰 Con	nect to a network		
Select	a network to conne	ct to	
Sh	iow All	•	47
2	SWRDG	Security-enabled network	Î lite.
<b>S</b>	bu	Unsecured network	llie
2	IAPO-G54	Security-enabled network	lite.
	1		-H -
<u>Set up a</u> Open Ne	connection or network etwork and Sharing Cente	ſ	
			Connect Cancel

- \* If selected network is not secure, please choose [Connect anyway]
- 3. You may need to wait for few seconds when Windows connects to wireless network

Somect to a network	
Connecting to AzureWave	
🔍 — — 💐	
	Cancel

4. Now the selected wireless network is connected



5. If you want to see the connection status, please right-click on the network you choose and select [Status]

00	🗢 🔮 « Networ	rk and Internet 🕨 N	letwork Connecti	ons 🕨	<b>-</b> 4 <sub>7</sub>	Search	م
🌗 Organ	nize 👻 📲 Viev	vs 👻 💇 Connec	t To 🛛 🔀 Disabl	e this network device	📑 Diagnose t	his connection	1 » 🕐
Name	Status	Device Name	Connectivity	Network Category	Owner	Туре	Phone # or Host Addre
LAN or H	ligh-Speed Intern Wireless Network	et (1)					^
	2	c connection					
-400	AzureWave	Disable Connect ( Di					
		Status	connect				
		Diagnose	B				
		Bridge Conne	ections				
		Create Short	ut				
		Delete					
		Rename					
		Properties					
				-			

### 6. This is the information of network status

aff] Wireless Network Connection 2 Status				
General				
Connection				
IPv4 Connectivity: Internet				
IPv6 Connectivity: Limited				
Media State: Enabled				
SSID: AzureWave				
Duration: 00:03:42				
Speed: 48.0 Mbps				
Signal Quality:				
Details Wireless Properties				
Activity				
Sent — Received				
Bytes: 60,071 2,286,765				
Properties Cisable Diagnose				
Close				

### IV. Setup for Ad-hoc Mode

### i. For Windows XP OS

If you want to choose Ad-hoc mode, please right-click network icon on desktop shortcut and choose "Open Network Connections", or go to [Control Panel] and double-click "Network Connection" icon.

Disable <b>Status</b> Repair								
View Available Wireless Networ	rks							
Change Windows Firewall settin	ngs		citis ali					
Open Network Connections	2 <del>1</del> 2 - 22 - 24	10 () <mark>(</mark>	4:52 PM					
🛃 Control Panel								
File Edit View Favorites Tools	Help							-
🌀 Back 🔹 🕥 - 🏂 🔎 S	earch   😥 Fol	ders 👬 🕶						
Address 🔂 Control Panel							~	🔁 Go
	ሌ	2	6	-	2	a.	Xear	
Switch to Category View	Accessibility Options	Add Hardware	Add or Remov	Administrative Tools	Automatic Updates	Avira AntiVir PersonalEdi	CMI Audio Config	
See Also	P	1	N		3	e	1	
Sec Vindows Update	Date and Time	Display	Folder Options	Fonts	Game Controllers	Internet Options	Keyboard	
Help and Support	3				۹.		۲	
	Mouse	Network Connections	Network Setup Wizard	Phone and Modem	Power Options	Printers and Faxes	Regional and Language	
	3	1	۲	O,	Ż			
	Scanners and Cameras	Scheduled Tasks	Security Center	Sounds and Audio Devices	Speech	System	Taskbar and Start Menu	
	<u>83</u>	3						
	User Accounts	Windows CardSpace	Windows Firewall	Wireless Network Set	郵件			
Connects to other computers, networks, a	nd the Internet.							

When you see the "Network Connections" screen, please follow the steps below to setup Ad-hoc mode.

1. Double-click "Wireless Network USB Adapter" icon to enter its properties



2. Click "General" tab and double-click the "Internet Protocol (TCP/IP)" item

📥 Wireless Network Connection 6 Properties 👘 🕐	×
General Wireless Networks Advanced	
Connect using:	
B02.11n USB Wireless LAN Card Configure	
This connection uses the following items:	
File and Printer Sharing for Microsoft Networks     QoS Packet Scheduler     Tinternet Protocol (TCP/IP)	
<	
Instal Uninstal Properties	
Description	
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Show icon in notification area when connected Notify me when this connection has limited or no connectivity	
DK Cancel	5

3. Choose "Use the following IP address:" and type the IP address; then click [OK]

Internet Protocol (TCP/IP) Properties 🛛 🛛 🛛 🔀						
General						
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.						
Obtain an IP address automatical	y					
<ul> <li>Use the following IP address:</li> </ul>						
IP address:	192.168.0.10					
Subnet mask:	255.255.255.0					
Default gateway:	Default gateway:					
Obtain DNS server address autor	natically					
<ul> <li>Use the following DNS server add</li> </ul>	resses:					
Preferred DNS server:						
Alternate DNS server:						
	Advanced					
	OK Cancel					

\*Note: the IP address of the other wireless card should be set with the same subnet mask

4. Right-click the "Wireless Network Connection" icon and choose "properties"

S Network Connections	
File Edit View Favorites Tools Advanced Help	<b>1</b>
🕞 Back 🔹 🕥 🕤 🏂 Search 🎼 Folders 🔛 -	
Address 🕥 Network Connections	🗸 🄁 Go
Network Connection   Create a new connection   Connection   Create a new connection   Connections   Create showork   Create showork   Connections   Create showork   Connection   Create showork   Connection   Create showork   Create showork   Connection   Create showork   Creat	
Wew or change settings for this connection, such as adapter, protocol, or modem configuration settings.	

5. Select "Wireless Network" tab and choose [Add]

🕹 Wireless Network Connection 6 Properties 👘 🕐 🔀
General Wireless Networks Advanced
Use Windows to configure my wireless network settings
- Available networks:
To connect to, disconnect from, or find out more information about wireless networks in range, click the button below.
View Wireless Networks
Preferred networks: Automatically connect to available networks in the order listed below: Move up Move down
Add Remove Properties Learn about setting up wireless network Advanced configuration.
OK Cancel

6. Type "Network name (SSID)" and choose "Data encryption" if you want to protect the network security

Wireless network p	roperti	es	? 🔀
Association Authentio	ation C	onnection	
Network name (SSID)	): be	est	
-Wireless network k	ey		
This network requir	es a key f	or the following:	
Network Authentic	ation	Open	~
Data encryption:		Disabled	~
Network key:			
Confirm network ke	y:		
Key index (advance	ed): 1	4 . V	
The key is provi	ded for m	e automatically	
This is a computer access points are	not used	uter (ad hoc) network; w	ireless
		ОК	Cancel

7. When you see the dialogue showing your network is unsecured, please click [Continue Anyway]

#### 8. Now your network is in Ad-hoc mode

🕹 Wireless Network Connection 6 Properties 👘 💽 🔀
General Wireless Networks Advanced
Use Windows to configure my wireless network settings
Available networks:
To connect to, disconnect from, or find out more information about wireless networks in range, click the button below.
View Wireless Networks
Preferred networks: Automatically connect to available networks in the order listed below:
Move up Move down
Add Remove Properties
Learn about <u>setting up wireless network</u> Advanced
OK Cancel

#### ii. For Windows Vista OS

Please follow the steps to setup Ad-hoc mode for Windows Vista.

1. Right-click the Network neighbor to choose "properties," or you can right-click network icon on desktop shortcut and choose "Network and Sharing Center"





2. When you see the "Network and Sharing Center" windows, please select "Manage network connection" bar



3. Right-click the connected network icon and choose "Properties"



4. When you see the warning message, please click [Continue]



5. Choose "Networking" tab and double-click the "Internet Protocol Version 4 (TCP/IPv4)" item



6. Choose "Use the following IP address:" and type the IP address; then click [OK]

Internet Protocol Version 4 (TCP/IPv4)	Properties			
General				
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.				
Obtain an IP address automatically				
Use the following IP address:				
IP address:	192.168.0.10			
Subnet mask:	255.255.255.0			
Default gateway:				
Obtain DNS server address autom	atically			
Use the following DNS server add	resses:			
Preferred DNS server:				
Alternate DNS server:	• • •			
	Advanced			
	OK Cancel			

\*Note: the IP address of the other wireless card should be set with the same subnet mask

7. Choose "Manage wireless networks" bar



### 8. Select [Add]

Cool and Internet	<ul> <li>Manage Wireless Networks</li> </ul>	- + Search	م
Manage wireless networks the Windows tries to connect to these net can also add or remove network profi	nat use (Wireless Networ tworks in the order listed below. les.	rk Connection 2) To change the order, drag a network up	o or down in the list. You
🚽 Add 🖲 Adapter properties  & Pr	rofile types 🛛 💱 Network and S	haring Center	0
Networks you can view and modify (1) -			•
AzureWave Sec	urity: WEP	Type: Any supported	Automatically con
1 item			A

9. Choose "Create ad-hoc network"

How d	lo you want to add a network?	
2	Add a network that is in range of this computer This shows you a list of networks that are currently available and lets you connect to one. Once you connect, a profile for the network is saved on your computer.	
2	Manually create a network profile This creates a new network profile or locates an existing network and saves a profile for the network on your computer. You need to know the network name (SSID) and security key (if applicable).	
4	Create an ad hoc network This creates a temporary network for sharing files or an Internet connection	

Manually connect to a wireless network	
Set up a wireless ad hoc network	
An ad hoc network (sometimes called a computer-to-computer network) is a temporary network used for sharing files, presentations, or an Internet connection among multiple computers and devices.	
Computers and devices in ad hoc networks must be within 30 feet of each other.	
If you're currently connected to a wireless network, you might be disconnected when you set up this network.	1
Next	Cancel

11. Enter "Network name" and if you want to protect the network security, please choose in "security type"; then click [Next]

			• 💌
G Manually connect to a w	ireless network		
Give your network a n	name and choose security o	ptions	
Network name:	test		
Security type:	No authentication (Open)	Help me choose	
Security key/Passphrase:		Display characters	
☑ Save this network			
		Next	Cancel

12. Now your network is in Ad-hoc mode

	- • •
Manually connect to a wireless network	
The test network is ready to use This network will appear in the list of wireless networks and will stay active until everyone disconnects from it. Give the network name and security key (if any) to people you want to connect to this network.	
Wireless network name: test Network security key: unsecured	
To share files, open <u>Network and Sharing Centes</u> in Control Panel and turn on file sharing.	
	Close

#### **Federal Communication Commission Interference Statement**

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.

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

#### **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 device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further <u>transmitter</u> test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE:** In the event that these conditions <u>can not be met</u> (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID <u>can not</u> be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

### **End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: TLZ-NU182H". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

### Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.