Wireless ADSL 2 + ROUTER WA41R

User's Manual

March 2010

FCC Warning

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 or more 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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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 equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of about eight inches (20cm) between the radiator and your body.

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

REMARK

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

IEEE 802.11b or 802.11g operation of this product in the Canada is firmware-limited to channels 1 through 11.

CE 0984 (!)

E=10.49221 V/m is the maximum E-Field strength when safety distance between the EUT and human body is maintained at least 20cm, which is below 61V/m as required in Annex III table 2 of EC Council Recommendation (1999/519/EC). This proves that the unit complies with the EN 62311 for RF exposure requirement.

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (2004/108/EC), Low-voltage Directive (2006/95/EC), the procedures given in European Council Directive 99/5/EC and 2004/104/EC.

The equipment was passed. The test was performed according to the following European standards:

- EN 300 328 V.1.7.1
- EN 301 489-1 V.1.8.1 / EN 301 489-17 V.2.1.1
- EN 62311
- EN 60950-1

Regulatory statement (R&TTE)

- European standards dictate maximum radiated transmit power of 100mW EIRP and frequency range 2.400-2.4835GHz;
- In France, the equipment must be restricted to the 2.4465-2.4835GHz frequency range and must be restricted to indoor use.

Operation of this device is subjected to the following National regulations and may be prohibited to use if certain restriction should be applied.

D=0.020m is the minimum safety distance between the EUT and human body when the E-Field strength is 61V/m.

All brand and product names mentioned in this manual are trademarks and/or registered trademarks of their respective holders.

Contents

1. Introduction	4
1.1 Introduction to Wireless LAN ADSL2+ router	. 4
1.2 Product Features	. 4
2. Hardware Installation	7
2.1 System Requirements	. 7
2.2 Package Contents	. 7
2.3 Front Panel Indicators and Description	. 7
2.4 Back Panel	. 8
2.5 Connect Related Devices	. 9
3. Connecting Wireless LAN ADSL2+ Router via Ethernet1	10
3.1 Setup ADSL2+ router via Ethernet Cable	10
3.2 Configure TCP/IP	10
4. Configure Wireless LAN ADSL2+ Router via HTML Interface2	26
4.1 Login	26
4.2 Status	28
4.3 LAN	29
4.4 Wireless	30
4.4.1 Basic Settings	30
4.4.2 Advanced Settings	32
4.4.3 Security	33
4.4.4 Access Control	34

4.4.5 WPS	35
4.4.6 MBSSID	35
4.5 WAN	36
4.5.1 Channel Configuration	36
4.5.2 ATM Settings	37
4.5.3 ADSL Settings	39
4.6 Service	40
4.6.1 DHCP	40
4.6.2 DNS	42
4.6.3 Firewall	44
4.6.3.1 IP/Port Filtering	44
4.6.3.2 MAC Filtering	46
4.6.3.3 Port Forwarding	47
4.6.3.4 URL Blocking	48
4.6.3.5 Domain Blocking	49
4.6.3.6 DMZ	49
4.6.4 UPnP	50
4.6.5 RIP	51
4.7 Advance	52
4.7.1 ARP Table	52
4.7.2 Bridging	53
4.7.3 Routing	54
4.7.4 SNMP	55
4.7.5 Port Mapping	57
4.7.6 IP QoS	57
4.7.7 Remote Access	59
4.7.8 Others	60
4.8 Diagnostic	61
4.8.1 Ping	61
4.8.2 ATM Loopback	62
4.8.3 ADSL	63
4.8.4 Diagnostic Test	64
4.9 Admin	65
4.9.1 Commit/Reboot	65
4.9.2 Backup/Restore	66
4.9.3 Password	67

4.9.4 Upgrade Firmware	
4.9.5 ACL Configuration	
4.9.6 Time Zone	
4.9.7 TR-069 Configuration	
4.10 Statistics	
4.10.1 Interface	
4.10.2 ADSL	

1. Introduction

1.1 Introduction to Wireless LAN ADSL2+ router

This full rate ADSL2+ router is an all-in-one Wireless ADSL2+ router for Home and SOHO applications. This gateway are with full-featured ADSL router that provides high-speed Internet access, 1-port Ethernet switch direct connections to individual PCs or local area network with 10/100 Base-T Ethernet and a 150Mbps IEEE802.11n wireless connectivity. WA41R uses advanced ADSL chipset solution with complete set of industry standard features for high-speed Internet access. Also built-in 150 Mbps IEEE802.11n wireless service can provide you easy and convenient way to connect the PCs and Internet. User can enjoy higher quality multimedia and real-time applications such as online gaming, Video-on-Demand, VoIP and other bandwidth consuming services. Also the feature-rich routing functions are seamlessly integrated to ADSL service for existing corporate or home users. This product is made in ISO9001 approved factory and complies with FCC part15 regulations and CE approval.

1.2 Product Features

High Speed Internet Access

This ADSL router complies with ADSL / ADSL2 / ADSL2+ standards. It can support downstream rates of up to 24Mbps and upstream rates of up to 1Mbps. This ADSL router is compliant with the following standards.

- ANSI T1.413 issue 2
- ITU-T G.992.1 (G.dmt)
- ITU-T G.992.2 (G.lite)
- G.994.1 (G.hs, Multimode)
- ITU-T G.992.3 (ADSL2 G.dmt.bis)

- ITU-T G.992.4 (ADSL2 G.lite.bis)
- ITU-T G.992.5 (ADSL2+; Annex A, B, L & M)
- Reach Extended ADSL (RE ADSL)

Multi-connection protocol support

- Support up to 8 PVCs
- ATM forum uni 3.1/4.0 PVC
- Multi Protocol over AAL5 (RFC1483 / 2684)
- VC and LLC Multiplexing
- PPP over Ethernet (RFC 2516)
- PPP over ATM (RFC 2364)
- Traffic shaping (ATM QoS) UBR, CBR, VBR, VBR-rt, VBR-nrt
- OAM F4 and F5 segment end-to-end loop-back, AIS, and RDI OAM cells
- VPI is 0-255 and VIC is 32-65535

Bridging / Routing support

- Ethernet to ADSL self-learning Transparent Bridging (IEEE 802.1d)
- IP routing-RIPv2 (backward compatible with RIPv1)
- Static IP routing
- Routing (TCP/IP/UDP/ARP/ICMP)
- IP Multicast IGMP v1/v2

IP Management

- NAT (Network Address Translation)
- NAPT (Network Address and Port Translation)
- DHCP Server / Relay / Client (WAN port)
- VPN (IPSec, PPTP, L2TP) Pass-Through
- DNS Proxy
- Dynamic DNS
- UPnP support
- Virtual Server (Port forwarding & DMZ host)

WLAN Network

- Compatible with IEEE 802.11n/b/g
- 64/128 bits WEP Encryption
- WPA-PSK, TKIP / WPA2-AES, PSK

- Supports Quality of Service (QoS), 802.11e, WMM
- MAC Address Filtering

Security

- PPP over PAP (Password Authentication Protocol; RFC1334)
- PPP over CHAP (Challenge Authentication Protocol; RFC1994)
- DOS Protection
- Stateful Packet Inspection (SPI)
- Built-in NAT Firewall
- IP-based Packet filtering
- Password Protected System Management

Web-Based Management

- Web-Based GUI configuration / Management
- CLI (Command Line Interface) via serial interface or Telnet over Ethernet
- Telnet Remote Management
- Firmware upgrade via FTP / TFTP
- SNMP Support
- HTTPS Support
- Built-in Diagnostic Tool
- TR-069 support

Network Address Translation (NAT)

Network Address Translation (NAT) allows the translation of an Internet protocol address used within one network (for example a private IP address used in a local network) to a different IP address known within another network (for example a public IP address used on the Internet).

Universal Plug and Play (UPnP)

Universal Plug and Play is a standard that uses Internet and Web protocols to enable devices such as PCs, peripherals, intelligent appliances, and wireless devices to be plugged into a network and automatically know about each other. This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs.

Dynamic DNS Support

With Dynamic DNS support, you can have a static hostname alias for a dynamic IP address, allowing the host to be more easily accessible from various locations on the Internet. You must

register for this service with a Dynamic DNS client.

DHCP Support

DHCP (Dynamic Host Configuration Protocol) allows individual clients to obtain TCP/IP configuration at start-up from a centralized DHCP server. The ADSL router has built-in DHCP server capability enabled by default. It can assign IP addresses, an IP default gateway and DNS servers to DHCP clients. It can also act as a surrogate DHCP server (DHCP Relay) where it relays IP address assignment from the actual real DHCP server to the clients.

SNMP (Simple Network Management Protocol) Support

It's an easy way to remote control the router via SNMP.

Multiple PVC (Permanent Virtual Circuits) Support

- Supports OAM F4/F5 loop-back, AIS and RDI OAM cells.
- ATM Forum UNI 3.1/4.0 PVC
- Support up to 8PVCs.

2. Hardware Installation

2.1 System Requirements

- Pentium III 266 MHz processor or higher
- 128 MB RAM minimum
- 20 MB of free disk space minimum
- RJ-45 Ethernet Port
- CD-ROM drive

2.2 Package Contents

- ADSL Ethernet Router
- RJ-45 Ethernet cable
- RJ-11 Phone cable
- Power Adapter
- Software driver CD

2.3 Front Panel Indicators and Description

Front panel of ADSL router has LED indicators to display router's operating status.



Descriptions of LED status

	ON/OFF Button	Click On/Off button to enable Wireless ADSL Router.
	WPS	Blinking: The WPS function is establishing.
		Slow Blinking: WLAN is successfully connected.
-		Blinking: The data is being sent or received.
		Light up: LAN connection with end user is established.
	LAN	Blinking: Router is transferring data between the router and end user.
0	Internet	Blinking: Router is transferring data between Internet and router
	ADSL	Light up: WAN Port is successfully connected.
ADSL	(WAN)	Blinking: NO ADSL physical is connected.
USB	USB	When an active USB cable is connected with router, this LED will light up.
da	Deveen	ON: Wireless Router is powered on.
0	Power	OFF: Wireless Router is powered off.
WPS	WPS	Click WPS button about 3-5 seconds while you are connecting a PC of wireless
\bigcirc	Button	adapter with WPS function.

2.4 Back Panel



Descriptions of All Connectors

Line	Ethernet RJ-11 phone cable
LAN	Ethernet RJ-45 Connector, connect to PC with a RJ-45 Ethernet cable.

USB	Connect with USB cable to PC.
PWR	Connect with power adapter

2.5 Connect Related Devices

1) Connect Router to LINE

Plug the provided **RJ-11 phone cable** into **LINE port** on the back panel of the router and insert the other end into splitter or wall phone jack.

2) Connect Router to LAN

Plug **RJ-45 Ethernet Cable** into **LAN port** on the back panel of the router and insert the other end of the Ethernet cable on your PC's Ethernet port or switch / hub.

- Connect Router to Power Adapter
 Plug Power Adapter to PWR port on the back panel of the router and the other end to a power outlet.
- 4) Press **ON/OFF** button to start the router

Warning! Only use the power adapter provided in the package, otherwise it may cause hardware damage.

3. Connecting Wireless LAN ADSL2+ Router via Ethernet

You can connect Wireless LAN ADSL2+ router with PC through either Ethernet cable. You can change the settings via WEB browser.

3.1 Setup ADSL2+ router via Ethernet Cable

If there is an available LAN card present on your PC, you just simply connect ADSL router and PC through the Ethernet cable. Once you establish Internet connection, you could browse the Web through the Ethernet cable.

3.2 Configure TCP/IP

For Windows 2000

- Step 1: (a) Right-click My Network Places and select Properties in the main window screen
 - (b) Or, go to Start / Settings / Control Panel. In the Control Panel, double-click on Network and Dial-up Connections.



Step 2: Right click Local Area Connection (your local network hooked up with ADSL router) and select Properties:

Network and Dial-up Connection	s			_ 🗆 ×
File Edit View Favorites Tools	Advanced	Help		11
🔃 Back 🔹 🔿 👻 🔂 🎯 Search	🔁 Folders 🛛 🤇	3 4 4 2 >	< vo 🗐 🎟 -	
Address 🖻 Network and Dial-up Conne	ections			▼ @Go
	F		μ η ι μ	
Network and Dial-up	Make New Connection	Local Area Connection 2	Local Area Connection 4 Disable	
connections			Status	
Local Area Connection 4			Create Sho	ortcut
Type: LAN Connection			Delete	
Status: Enabled			kename	
Realtek USB Remote NDIS Device			Properties	
🖳 Displays the properties of the selecte	d connection.			11

Step 3: Select Internet Protocol (TCP/IP) then click Properties:

Local Area Connection 4 Properties	? ×
General Sharing	
Connect using:	
B Realtek USB Remote NDIS Device	
<u>C</u> onfigu	ire
Components checked are used by this connection:	
Client for Microsoft Networks Sector Sharing for Microsoft	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The defaul wide area network protocol that provides communication across diverse interconnected networks.	
Sho <u>w</u> icon in taskbar when connected	
OK Ca	ncel

Configure IP Automatically:

Step 4: Select Obtain an IP address automatically and Obtain DNS server address

automatically then click **OK** to complete IP configuring process.

You can get IP settings assigne his capability. Otherwise, you n	d automatically if your network supports eed to ask your network administrator fo
he appropriate IP settings.	
 Ubtain an IP address auto Use the following IP address 	omatically ess:
IP address:	
S <u>u</u> bnet mask:	
Default gateway:	· · ·
Obtain DNS server addres	ss automatically
O Use the following DNS se	rver addresses:
Preferred DNS server:	
Alternate DNS server:	

Configure IP Manually:

Step 4: Select Use the following IP address and Use the following DNS server

addresses.

nternet Protocol (TCP/IP) Properti	ies 🤶 🕺
General	
You can get IP settings assigned auto this capability. Otherwise, you need to the appropriate IP settings.	matically if your network supports ask your network administrator for
Obtain an IP address automatica	ally
IP address:	192.168.1.10
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
Default gateway:	192.168.1.1
Obtain DNS server address auto	matically
- Use the following DNS server ac	ddresses:
Preferred DNS server:	168.95.1.1
<u>A</u> lternate DNS server:	
	Ad <u>v</u> anced
	OK Cancel

IP address: Fill in IP address 192.168.1.x (x is a number between 2 to 254).

Subnet mask: Default value is 255.255.255.0.

Default gateway: Default value is 192.168.1.1.

Preferred DNS server: Fill in preferred DNS server IP address.

Alternate DNS server: Fill in alternate DNS server IP address.

For Windows XP

Step 1: Click Start then select Control Panel (in the Classic View).



Step 2: Double-click Network Connections icon.

Secontrol Panel							
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Help						.
🔇 Back + 🕥 + 🏂 🔎 S	iearch 😥 Fold	ers 🛄 -					
Address 📴 Control Panel							💙 🔁 Go
Control Panel	د Accessibility Options	Rdd Hardware	Add or Remov	Administrative Tools	Automatic Updates	Date and Time	S Display
See Also 🛞	Folder Options	Fonts	Game Controllers	Intel(R) GMA Driver	Internet Options	达 Keyboard	Mouse
Help and Support	Network Connections	Metwork Setup Wizard	Phone and Modem	Power Options	Printers and Faxes	Regional and Language	Scanners and Cameras
	Scheduled Tasks	Security Center	SoundMAX	Sounds and Audio Devices	Speech	System	Taskbar and Start Menu
	User Accounts	Windows Firewall	Wireless Network Set				

Step 3: Right-click Local Area Connection (local network your ADSL hooked up with) and select Properties:



Step 4: Select Internet Protocol (TCP/IP) then click Properties:

🕹 Local Area Connection 2 Properties 🛛 🔹 🛛 🖓
General Authentication Advanced
Connect using:
Realtek USB Remote NDIS Device
This connection uses the following items:
Client for Microsoft Networks Client for Microsoft Networks Q QoS Packet Scheduler Internet Protocol (TCP/IP)
Install Uninstall Properties
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
OK Cancel

Configure IP address Automatically:

Step 5: Select Obtain an IP address automatically and Obtain DNS server address automatically. Click OK to finish the configuration.

Internet Protocol (TCP/IP) Properties	? 🗙					
General Alternate Configuration						
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						
O Use the following IP address:						
IP address:						
Subnet mask:						
Default gateway:						
⊙ 0 <u>b</u> tain DNS server address automatically						
O Use the following DNS server addresses:						
Preferred DNS server:						
Alternate DNS server:						
Ad <u>v</u> anced.						
OK Can	cel					

Configure IP Address Manually:

Step 5: Select Use the following IP address and Use the following DNS server addresses.

Internet Protocol (TCP/IP) Prop	erties 🛛 🛛 🛛 🛛					
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						
• • • • • • • • • • • • • • • • • • •						
IP address:	192.168.1.10					
S <u>u</u> bnet mask:	255 . 255 . 255 . 0					
<u>D</u> efault gateway:	192.168.1.1					
Obtain DNS server address automatically						
Use the following DNS server ac	ddresses:					
Preferred DNS server:	168.95.1.1					
<u>A</u> lternate DNS server:						
Ad <u>v</u> anced						
OK Cancel						

IP address: Fill in IP address 192.168.1.x (x is a number between 2 to 254).

Subnet mask: Default value is 255.255.255.0.

Default gateway: Default value is 192.168.1.1.

Preferred DNS server: Fill in preferred DNS server IP address.

Alternate DNS server: Fill in alternate DNS server IP address.

You can use ping command under DOS prompt to check if you have setup TCP/IP protocol correctly and if your computer has successfully connected to this router.

1) Type **ping 192.168.1.1** under DOS prompt and the following messages will appear:

C:\WINDOWS\system32\cmd.exe	- 🗆 X
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985-2001 Microsoft Corp.	-
C:\Documents and Settings\Price ping 192.168.1.1	
Pinging 192.168.1.1 with 32 bytes of data:	
Reply from 192.168.1.1: bytes=32 time=2ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64 Reply from 192.168.1.1: bytes=32 time=1ms TTL=64	
Ping statistics for 192.168.1.1: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 2ms, Average = 1ms	
C:\Documents and Settings\Price>_	
	-

If the communication link between your computer and router is not setup correctly, after you

type ping 192.168.1.1 under DOS prompt following messages will appear:

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.

Request timed out.

Request timed out.

This failure might be caused by cable issue or something wrong in configuration procedure.

For Windows Vista

Step 1: Click Start then select Control Panel (in the Classic View).



Step 2: Double-click Network and Sharing Center icon.

								_		
Control Panel >							- 49	Search		Q
Control Panel Home	Name	Category						-		-
Classic View	I,	(3	-		P	-	÷.,	3
	Add Hardware	Administrat Tools	AutoPlay	Backup and Restore C	BitLocker Drive En	Color Management	Date and Time	Default Programs	Device Manager	Ease of Acce
		A	50	æ,		e,	0	ð	1) 🖻
	Folder Options	Fonts	Game Controllers	Indexing Options	Internet Options	iSCSI Initiator	Keyboard	Mouse	Network and Sharing Center	Offline Files
1	<u>.</u>	1	2.2	Nh	2	1	1	-	4	1
	Parental Controls	Pen and Input Devices	People Near Me	Performance Informatio	Personaliz	Phone and Modem	Power Options	Printers	Problem Reports a	Programs and Features
111	8		۲			Ģ				
	Regional and Language	Scanners and Cameras	Security Center	Sound	SoundMAX	Speech Recogniti	Sync Center	System	Tablet PC Settings	Taskbar and Start Menu
	2	82	23	3		1		Ú,	2	
<u>///</u>	Text to Speech	User Accounts	Welcome Center	Windows CardSpace	Windows Defender	Windows Firewall	Windows Sidebar	Windows SideShow	Windows Update	

Step 3: Select "Manage Network connections".

Control Panel + 1	Vetwork and Sharing Center	✓ ⁴ → Search	م
Tasks View computers and devices	Network and Sharing Co	enter	View full area
Connect to a network Set up a connection or network <u>Manage network connections</u>	TEST-PC	Network 2	= Uniternet
Diagnose and repair	(This compute	rrk)	Customize
	Access	Local only	
	Connection	Local Area Connection	View status
	3 Sharing and Discovery		
1119 3 1	Network discovery	● Off	\odot
1111 1	File sharing	● Off	\odot
	Public folder sharing	● Off	\odot
	Printer sharing	 Off (no printers installed) 	\odot
	Password protected sharing	• On	$\overline{\mathbf{e}}$
See also	Media sharing	© Off	\odot
Internet Options Windows Firewall	Show me all the files and folde Show me all the shared netwo	ers I am sharing rk folders on this computer	

Step 4: Right-click Local Area Connection (local network your ADSL hooked up with) and select Properties: