

4 Port ADSL2+ 11n 150Mbps Router

SR310N

USER MANUAL

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Reference Standards

Related Documents

Definition & Acronyms

ATU-C	ADSL Transceiver Unit, Central Office End
ATU-R	ADSL Transceiver Unit, Remote Terminal End
FEXT	Far-end Cross Talk
HDSL	High-rate Digital Subscriber Line
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Network
WINS	Windows® Internet Name Server
ADSL	Asymmetric Digital Subscriber Line
OAM	Operations, Administration And Maintenance
QAM	Quadrature Amplitude Modulation
DMT	Discrete Multitone
DSL	Digital Subscriber Line
FEC	Forward Error Correction
ATM	Asynchronous Transfer Mode
WAN	Wide Area Network
PRD	Pseudo-random Downstream
PRU	Pseudo-random Upstream
LAN	Local Area Network
PVC	Permanent Virtual Circuit
SVC	Switched Virtual Circuit
PPP	Point to Point protocol
DNS	Domain Name Server
VPI	Virtual Path ID
VCI	Virtual Circuit ID
DSL	Digital Subscriber Line
IP	Internet Protocol
CO	Central Office
EC	Echo Canceling

OVERVIEW

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1. OVERVIEW

1.1 ABOUT ADSL AND ADSL 2+

ADSL MODEM is a broadband Internet access device, which utilizes the high frequency segment of the phone line to transmit high-speed data without interfering with the voice transmission. The frequency of ADSL signal is higher than that of voice, so voice and ADSL signal can coexist in one line by using a splitter to insulate each from the other. ADSL data transfer on the asymmetry way. The upload speed is up to 1Mbps and download speed is up to 8Mbps. It is an ideal device for broadband access.

Transmission performance of ADSL2 is improved comparing with the first generation of ADSL. These improvements are mainly concerned with long distance, anti-line-loss, anti-noise, etc. By doubling the transmission bandwidth, ADSL2+ has implemented a downlink rate as high as 24 Mbps. Therefore, Internet applications such as synchronous transmission of multi video stream, online games and huge capacity of downloading files are made possible.

1.2 DEVICE INTRODUCTION



Figure 1.1

Interface introduction:

- a) Power Interface: 12V DC, 500mA. 
- b) Switch: To turn on or turn off the power.
- c) WIFI: To switch on or switch off the WIFI.
- d) LAN1~LAN4: Connect Ethernet port of the Gateway with 10/100BASE-T port of the computer using the network cable that comes with the modem
- e) Line: Connected with phone line or “ADSL” port of the splitter.

1.3 LED STATUS INDICATION

Table 1.1

	Steady light	Flashing	Fast flashing	Off
POWER (green)	Power on	/	/	Power off
DSL(green)	The modem is in good connection	The modem is boot OK	In handshaking status	Power off
Internet(green)	Route mode and obtained IP address	Route mode and Data transmitting or receiving	/	Bridge mode or no Data transmitting or receiving
LAN(1-4) (green)	Ethernet line is connected to PC		Ethernet is transmitting data	Ethernet line not connected properly
WLAN(green)	/	/	Wireless is transmitting data	Disable Wireless
WPS(green)	/	/	Start WPS	Disable WPS

1.4 PROTOCOLS

ADSL Modem supports the following protocols:

1. PPPoA (PPP over ATM) LLC encapsulation or VCMUX encapsulation (RFC2364)
2. PPPoE (PPP over Ethernet) LLC encapsulation or VCMUX encapsulation (RFC2516)
3. 1483 bridge (1483 Bridged IP over ATM) LLC encapsulation or VCMUX encapsulation (RFC1483)
4. 1483 routing (1483 Routing IP over ATM) LLC encapsulation or VCMUX encapsulation (RFC1483)
5. Classical IP over ATM (RFC1577)

1.5 FEATURES

1. Supports ANSI T1.413 ISSUE 2, ITU G.992.1 (G.DMT), ITU G.992.2 (G.LITE), ITU G.992.3 (ADSL2), ITU G.992.5 (ADSL2+), Annex M.
2. Web-based configuration and monitoring.
3. Supports up to 8 PVCs.
4. Routing function.
5. NATP、DHCP function.

6. Support GUI Upgrading.
7. ATM management function.
8. Wireless access distance is more than 150m

1.6 ABOUT WIRLESS ADSL

An ADSL MODEM is a broadband Internet access device, which utilizes the high frequency segment of the phone line to transmit high-speed data without affecting the voice transmission. The frequency of the ADSL signal is higher than that of voice, so voice and ADSL signal can coexist in one line by using a splitter to insulate each from the other. ADSL data transfer adapts the asymmetry model. It supports upload transmission speed up to 2Mbps and download speed up to 24Mbps for ADSL2+. ADSL is an ideal device for broadband access.

But the ADSL users are also limited by the cable and can't move freely. Wireless ADSL is a new device that integrates WLAN and ADSL functions. User can slip the leash to visit Internet expediently as long as they install WLAN card into their computer. The device can be utilized in company, hotel, cafe, airport, station, and financial institution and home where there are many mobile users and the network infrastructures are difficult to establish. The wireless ADSL supports 802.11b, 802.11b+g, 802.11g, 802.11n and 802.11b+g+n mode with maximum data rate 150Mbps.

HARDWARE INSTALLATION AND SOFTWARE CONFIGURATION

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2. HARDWARE INSTALLATION AND SOFTWARE CONFIGURATION

2.1 SYSTEM REQUIREMENT

A computer with a network card with Ethernet interface.

2.2 HARDWARE INSTALLATION

2.2.1 HARDWARE CONNECTION



Figure 2.1

To go online and make phone calls simultaneously, please refer to Appendix B: SPLITTER CONNECTION.

2.2.2 INSTALLATION STEPS

1. Connect line port of the ADSL MODEM to telephone jack with the telephone cord that comes with the

modem.

2. Connect Ethernet port of the ADSL MODEM to Ethernet port of the computer using the network cable that comes with the modem.
3. Plug in the power cord , and turn on the power.

2.3 SOFTWARE CONFIGURATION

2.3.1 PREPARATION BEFORE SOFTWARE INSTALLATION

Before the installation, please confirm information below or consult with the ADSL service provider. Table 2.1 shows all the information needed to configure for different protocols.

Table 2.1

Protocol	Virtual Dial Mode		Private Line Mode
	PPPOE	PPPOA	1483 Bridged
Necessary Information	VPI	VPI	VPI
	VCI	VCI	VCI
	User name	User name	
	Password	Password	

2.3.2 COMPUTER CONFIGURATION

The default factory-set IP Address for the ADSL MODEM is: 192.168.1.1. The Subnet Mask is: 255.255.255.0. Users can configure ADSL MODEM through an Internet browser. ADSL MODEM can be used as a gateway and DNS server and users need to set the computer's TCP/IP protocol as follow:

1. Set the computer at same Internet segment with ADSL MODEM so as to enter ADSL MODEM configuration page through a browser.
2. Set the computer's gateway's IP address the same as the ADSL Modem's.
3. Set the computer's DNS server's IP address the same as the ADSL Modem's or that of an effective DNS server.

If the user has any question regarding the computer's TCP/IP protocol, please refer to APPENDIX C: TCP/IP PROTOCOL CONFIGURATION.

2.3.3 ADSL MODEM CONFIGURATION

Open the browser; input **http://192.168.1.1** in the address column. Press "Enter" key then the entry dialog box will pop up as Figure 2.2, Input username: **admin**, and password: **1234** then press "OK". The ADSL MODEM configuration page will be shown.



Figure 2.2

2.3.4 ADSL MODEM WORK MODE CONFIGURATION

- For different protocols, the users need to set ADSL Modem accordingly as listed below:

Table 2.2

	PVC	Protocol	Use DNS	User Name	Password
PPPoE	✓	PPPoE	Enable	✓	✓
PPPoA	✓	PPPoA	Enable	✓	✓

1483 Bridged	PVC	Default route
	✓	Disable

Note: ✓ means configure according to ADSL service provider’s instructed value.

PPPoE can also be realized via third party dialup software.

User Manual	PPPoE	PPPoA	1483 Bridged
Reference Chapter	3.3	3.3	3.2

- After getting through every page for parameters set-up, click “save” to save the value in ADSL MODEM
- Click the “**SysRestar**” on “**Maintenance**” Tab to enter the page as Figure 2.3. You can choose “Current Settings” and Click “**Restart**” button to reboot the ADSL MODEM. (You can also choose the “factory default settings” in order to restart the modem to default configuration.)

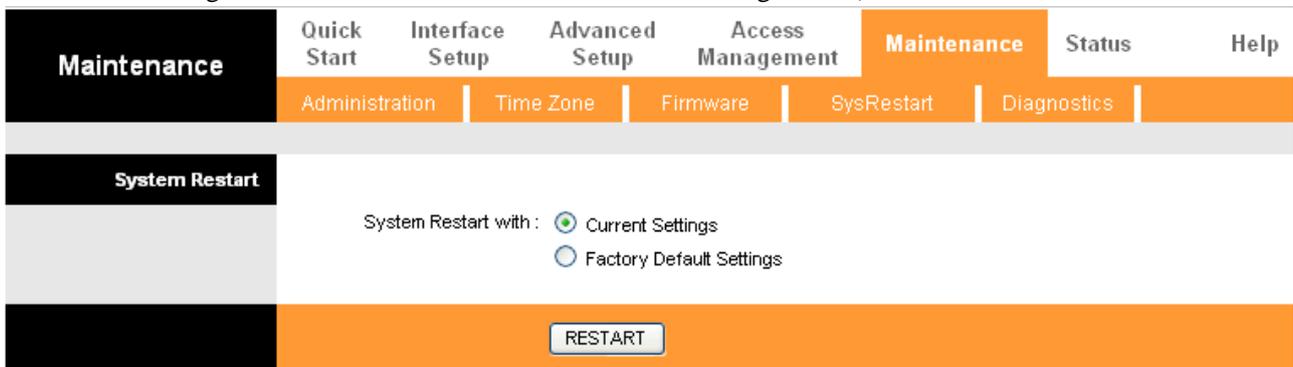


Figure 2.3

PROTOCOL CONFIGURATION

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3. PROTOCOL CONFIGURATION

If the configuration is bridge encapsulation, there is no need to configure any more parameters. Only need to use the third party dial-up software to connect the Internet.

Totally, this router supports: PPPoA、PPPoE、Bridging. For detail configuration information, please check the following configuration guide.

3.1 CONFIGURATION GUIDE

Click “Internet” on “Interface Setup” Tab. You can modify the configuration.

Note: At most we can have eight connections.

You can get the detail about the default seven connections after you click the button “PVCs Summary” as Figure 3.1

Service Information Summary

#	Active	VPI	VCI	ENCAP	Mux	IP Address	Status
0	Yes	0	33	1483 Bridged Only	LLC	N/A	N/A
1	No	0	34	1483 Bridged Only	LLC	N/A	N/A
2	No	0	35	1483 Bridged Only	LLC	N/A	N/A
3	No	0	36	1483 Bridged Only	LLC	N/A	N/A
4	No	0	37	1483 Bridged Only	LLC	N/A	N/A
5	No	0	38	1483 Bridged Only	LLC	N/A	N/A
6	No	0	39	1483 Bridged Only	LLC	N/A	N/A
7	No	0	40	1483 Bridged Only	LLC	N/A	N/A

Figure 3.1

If you need to add a new connection, please modify an existing connection

For example, if you need to add a new connection “VPI/VCI=8/88” (The correct PVC (VPI/VCI) you can get from the ISP.) instead of the connection “VPI/VCI=0/33”.

You can modify as Figure 3.2 and choose “PVC0” and find the change as Figure 3.3.

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
WAN Transfer Mode	Transfer Modes: ATM						
ATM VC	Virtual Circuit: pvc 0 PVCs Summary						
QoS	Status: <input checked="" type="radio"/> Activated <input type="radio"/> Deactivated						
	VPI: 8 (range: 0~255) VCI: 88 (range: 32~65535)						
IPv4/IPv6	ATM QoS: ubr						
	PCR: 0 cells/second						
	SCR: 0 cells/second						
	MBS: 0 cells						
Encapsulation	IP Version: <input type="radio"/> IPv4 <input checked="" type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6						
802.1q	ISP: <input type="radio"/> Dynamic IP Address <input type="radio"/> Static IP Address <input type="radio"/> PPPoA/PPPoE <input checked="" type="radio"/> Bridge Mode						
	802.1q: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated VLAN ID: 0 (range: 0~4095)						
Bridge Mode	Encapsulation: 1483 Bridged Only LLC						
<input type="button" value="SAVE"/> <input type="button" value="DELETE"/>							

Figure 3.2

Service Information Summary

#	Active	VPI	VCI	ENCAP	Mux	IP Address	Status
0	Yes	8	88	1483 Bridged Only	LLC	N/A	N/A
1	No	0	34	1483 Bridged Only	LLC	N/A	N/A
2	No	0	35	1483 Bridged Only	LLC	N/A	N/A
3	No	0	36	1483 Bridged Only	LLC	N/A	N/A
4	No	0	37	1483 Bridged Only	LLC	N/A	N/A
5	No	0	38	1483 Bridged Only	LLC	N/A	N/A
6	No	0	39	1483 Bridged Only	LLC	N/A	N/A
7	No	0	40	1483 Bridged Only	LLC	N/A	N/A

Figure 3.3

The Modem supports three ADSL protocol modes. Choose the protocol which is appointed by ISP and PVC encapsulation. Below, we introduce the configuration of the three protocol modes.

- PPP over ATM (PPPoA)
- PPP over Ethernet (PPPoE)
- Bridging

Some connection lines need to confirm the LLC or VC, if you can't confirm, please don't modify the default value or ask your ISP.

3.2 RFC1483 BRIDGE CONFIGURATION

If you get the correct PVC (VPI/VCI) which you can get from the ISP, you don't need modify another parameter. Click "save" to save configuration as Figure 3.4.

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
WAN Transfer Mode	Transfer Modes: ATM						
ATM VC	Virtual Circuit: PVC 0 PVCs Summary						
QoS	Status: <input checked="" type="radio"/> Activated <input type="radio"/> Deactivated						
	VPI: 8 (range: 0~255) VCI: 88 (range: 32~65535)						
IPv4/IPv6	ATM QoS: ubr						
	PCR: 0 cells/second						
	SCR: 0 cells/second						
	MBS: 0 cells						
Encapsulation	IP Version: <input type="radio"/> IPv4 <input checked="" type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6						
802.1q	ISP: <input type="radio"/> Dynamic IP Address <input type="radio"/> Static IP Address <input type="radio"/> PPPoA/PPPoE <input checked="" type="radio"/> Bridge Mode						
	802.1q: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated VLAN ID: 0 (range: 0~4095)						
Bridge Mode	Encapsulation: 1483 Bridged Only LLC						
<input type="button" value="SAVE"/> <input type="button" value="DELETE"/>							

Figure 3.4

3.3 PPPOA AND PPPOE CONFIGURATION

PPPoE is also known as RFC 2516. It is a method of encapsulating PPP packets over Ethernet.

PPPoA is also known as RFC2364 and named as Peer to Peer Protocol over ATM. As PPPoE, it also has all the features of PPP. Although it's based on ATM protocol, the setting of all the other parameters is similar with

PPPoE. So we only introduce PPPoE in detail here.

In Figure 3.4, select PPP over Ethernet (PPPoE), entering the configuration interface, as Figure 3.5

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
WAN Transfer Mode	Transfer Modes: ATM						
ATM VC	Virtual Circuit: pvc 0 PVCs Summary						
QoS	Status: <input checked="" type="radio"/> Activated <input type="radio"/> Deactivated						
	VPI: 8 (range: 0-255)						
	VCI: 88 (range: 32-65535)						
IPv4/IPv6	ATM QoS: ubr						
	PCR: 0 cells/second						
	SCR: 0 cells/second						
	MBS: 0 cells						
Encapsulation	IP Version: <input type="radio"/> IPv4 <input checked="" type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6						
802.1q	ISP: <input type="radio"/> Dynamic IP Address						
	<input type="radio"/> Static IP Address						
PPPoE/PPPoA	<input checked="" type="radio"/> PPPoA/PPPoE						
	<input type="radio"/> Bridge Mode						
Connection Setting	802.1q: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated						
	VLAN ID: 0 (range: 0-4095)						
	Username: username						
IP Options	Password:						
	Encapsulation: PPPoE LLC						
	PPP Authentication: AUTO						
	Bridge Interface: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated						
	Connection: <input checked="" type="radio"/> Always On (Recommended)						
IP Common Options	<input type="radio"/> Connect Manually						
	TCP MSS Option: TCP MSS(0 means use default) 0 bytes						
IPv4 Options	Default Route: <input checked="" type="radio"/> Yes <input type="radio"/> No						
	Get IP Address: <input type="radio"/> Static <input checked="" type="radio"/> Dynamic						
	Static IP Address: 0.0.0.0						
IPv6 Options	IP Subnet Mask: 0.0.0.0						
	Gateway: 0.0.0.0						
	NAT: Enable						
	Dynamic Route: RIP1 Direction None						
	TCP MTU Option: TCP MTU(0 means use default:1492) 0 bytes						
	IGMP Proxy: <input type="radio"/> Enable <input checked="" type="radio"/> Disabled						
	DHCP IPv6 Mode: <input checked="" type="radio"/> DHCP <input type="radio"/> SLAAC						
DHCP PD Enable: <input checked="" type="radio"/> Enable <input type="radio"/> Disable							
MLD Proxy: <input type="radio"/> Enable <input checked="" type="radio"/> Disable							
<input type="button" value="SAVE"/> <input type="button" value="DELETE"/>							

Figure 3.5

In Figure 3.4, select PPPoA from “Encapsulation” entering the configuration interface, as Figure 3.6

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
WAN Transfer Mode	Transfer Modes: ATM						
ATM VC	Virtual Circuit: PVC 0 PVCs Summary						
QoS	Status: <input checked="" type="radio"/> Activated <input type="radio"/> Deactivated						
	VPI: 8 (range: 0~255)						
	VCI: 88 (range: 32~65535)						
IPV4/IPV6	ATM QoS: ubr						
	PCR: 0 cells/second						
	SCR: 0 cells/second						
	MBS: 0 cells						
Encapsulation	IP Version: <input type="radio"/> IPv4 <input checked="" type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6						
	ISP: <input type="radio"/> Dynamic IP Address <input type="radio"/> Static IP Address <input checked="" type="radio"/> PPPoA/PPPoE <input type="radio"/> Bridge Mode						
802.1q	802.1q: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated						
PPPoE/PPPoA	VLAN ID: 0 (range: 0~4095)						
	Username: username						
	Password: ••••••••						
	Encapsulation: PPPoA.LLC PPP Authentication: AUTO						
Connection Setting	Connection: <input checked="" type="radio"/> Always On (Recommended) <input type="radio"/> Connect Manually						
IP Options	TCP MSS Option: TCP MSS(0 means use default) 0 bytes						
	Default Route: <input checked="" type="radio"/> Yes <input type="radio"/> No						
IPv4 Options	Get IP Address: <input type="radio"/> Static <input checked="" type="radio"/> Dynamic						
	Static IP Address: 0.0.0.0						
	IP Subnet Mask: 0.0.0.0						
	Gateway: 0.0.0.0						
	NAT: Enable						
IPv6 Options	Dynamic Route: RIP1 Direction None						
	TCP MTU Option: TCP MTU(0 means use default:1492) 0 bytes						
	IGMP Proxy: <input type="radio"/> Enable <input checked="" type="radio"/> Disabled						
	DHCP IPv6 Mode: <input checked="" type="radio"/> DHCP <input type="radio"/> SLAAC						
DHCP PD Enable: <input checked="" type="radio"/> Enable <input type="radio"/> Disable							
MLD Proxy: <input type="radio"/> Enable <input checked="" type="radio"/> Disable							
<input type="button" value="SAVE"/> <input type="button" value="DELETE"/>							

Figure 3.6

Select “Get IP Address Dynamic” and enter Service name, username, password.

- Broadband User Name: Your account from ISP to access Internet.
- Password: Input the password assigned by your ISP.

APPLICATION OF DHCP

4

4. APPLICATION OF DHCP

Apart from being a modem, ADSL Modem can also support router and DHCP applications, which are especially applicable for small business, small scale LAN, net-café etc.

The ADSL Modem can work as a router and DHCP sever without proxy server. The configuration steps are shown below:

4.1 TCP/IP PROTOCOL CONFIGURATION

1. Set IP address as “Automatically obtain IP address”;
2. Set gateway’s IP the same as Modem’s;

4.2 MODEM CONFIGURATION

1. Set protocol as described in Chapter 3.
2. DHCP sever settings:
 - a) Click “**lan**” label of Page “Interface Setup”.
Define DHCP starting IP Address and IP Pool Count shown as Figure 4.1.
 - b) Fill in the starting IP address. Here we will use 192.168.1.2 as an example.
 - c) Do not change other options. Click “Save” to save the config.

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
Router Local IP	<p>IP Address : <input type="text" value="192.168.1.1"/></p> <p>IP Subnet Mask : <input type="text" value="255.255.255.0"/></p> <p>Alias IP Address : <input type="text" value="192.168.2.1"/> (0.0.0.0 means to close the alias ip)</p> <p>Alias IP Subnet Mask : <input type="text" value="255.255.255.0"/></p> <p>IgmpSnoop : <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated</p> <p>MldSnoop : <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated</p> <p>Dynamic Route : <input type="text" value="RIP1"/> Direction <input type="text" value="None"/></p>						
DHCP	<p>DHCP : <input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Relay</p> <p>Start IP : <input type="text" value="192.168.1.2"/></p> <p>IP Pool Count : <input type="text" value="100"/></p> <p>Lease Time : <input type="text" value="259200"/> seconds (0 sets to default value of 259200)</p> <p>Physical Ports : <input checked="" type="checkbox"/> eth0 <input checked="" type="checkbox"/> eth1 <input checked="" type="checkbox"/> eth2 <input checked="" type="checkbox"/> eth3 <input type="checkbox"/> ra0</p>						
DNS	<p>DNS Relay <input checked="" type="radio"/> Automatically <input type="radio"/> Manually</p> <p>Primary DNS : <input type="text" value="N/A"/></p> <p>Secondary DNS : <input type="text" value="N/A"/></p>						

Figure 4.1



OTHER FUNCTIONS AND CONFIGURATION

5

5. OTHER FUNCTIONS AND CONFIGURATION

5.1 STATUS CHECKING

The working status of ADSL MODEM can be monitored by some pages.

1. Overview of Device Information

As shown in Figure 5.1, the information of Firmware Version, ADSL firmware Version, ADSL link status, link speed and LAN interface can be viewed on this page.

Status	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Device Info	System Log	Statistics				
Device Information	Firmware Version : TCLinux Fw #7.3.56.0 v002 MAC Address : 80:A1:D7:F9:66:B0						
LAN							
IPv4	IP Address : 192.168.1.1 Subnet Mask : 255.255.255.0 DHCP : Disabled						
IPv6	Link local IP : fe80::1/64 Manual Global IP : Dynamic Global IP : DHCP Server : Enable						
WAN							
	Interface : <input type="text" value="PVC0"/>						
IPv4	Connection Type : Bridge Status : Not Connected IP Address : N/A Subnet Mask : N/A Default Gateway : N/A Primary DNS : N/A						
IPv6	Status : Not Connected IP Address : N/A Prefix Length : N/A Default Gateway : N/A Primary DNS : N/A Prefix Delegation : N/A						
ADSL							
	ADSL Firmware Ver : FwVer:3.20.6.0_A_TC3087 HwVer:T14.F7_11.2 Line State : down Modulation : N/A Annex Mode : N/A						
		Downstream	Upstream				
	SNR Margin :	N/A	N/A				
	Line Attenuation :	N/A	N/A				
	Data Rate :	N/A	N/A				
	ES :	N/A	N/A				
	SES :	N/A	N/A				
	UAS :	N/A	N/A				

Figure 5.1

5.2 CONFIGURATION OF MODEM'S IP ADDRESS AND PASSWORD

1. CONFIGURATION OF MODEM'S IP ADDRESS

As a network device, ADSL Modem has its own IP address and MAC address. The factory sets the ADSL Modem at a default IP address of **192.168.1.1** and subnet mask of **255.255.255.0**. The user can configure these

addresses through the LAN page.

2. Configuration of administrator's password and user's password

When logging on the setting page of ADSL Modem, the system requires user name and password to verify for permission. The default administrator's account is "admin" and the default password for this account is "1234". The user, through the user configuration tab on **Administration** page, can change the passwords. (Attention: please remember the password after changing otherwise you will not be able to change configuration after saving.)

5.3 WIRELESS CONFIGURATION

Press "WIRELESS" on the top of web pages to enter wireless section. You can select to configure wireless setup, security and management.

5.3.1 WIRELESS SETUP

Click "WIRELESS" on the top menu to setup basic wireless parameters. In default, check "Access Point" box to launch wireless AP.

5.3.1.1. Access Point Settings

- **SSID** (Service Set Identifier): The mobile users cannot access WLAN until setting their SSID as the same value of the wireless ADSL. The SSID value of the ADSL is "default"
- **Current Channel**: To denote the different frequency of wireless signals whose value is from 1 to 11. The default value is "11". If there are more than one APs located in the same area, each of them must works at different channels to reduce interference. For Example: Three APs are install in the same place, the AP's channel should be 1,6 and 11 respectively.
- **Wireless mode**: The default setting is **802.11b+g+n** (Mixed mode). If you do not know or have among 11n 11g and 11b devices in your network, then keep the default setting
- **Beacon interval**: The Beacon Interval value indicates the frequency interval of the beacon. Enter a value between 20 and 1000. A beacon is a packet broadcast by the Router to synchronize the wireless network.
- **RTS/CTS Threshold**: The RTS (Request To Send) threshold (number of bytes) for enabling RTS/CTS handshake. Data with its frame size larger than this value will perform the RTS/CTS handshake. Setting this attribute to be larger than the maximum MSDU (MAC service data unit) size turns off the RTS/CTS handshake. Setting this attribute to zero turns on the RTS/CTS handshake Enter a value between 1500 and 2347.
- **DMIT**: This value, between 1 and 255, indicates the interval of the Delivery Traffic Indication Message (DTIM).

Interface	Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status	Help
	Internet	LAN	Wireless	IPv6RD			
Access Point Settings	<p>Access Point: <input checked="" type="radio"/> Activated <input type="radio"/> Deactivated</p> <p>Channel: RUSSIA <input type="text" value="06"/> Current Channel: <input type="text" value="6"/></p> <p>Beacon Interval: <input type="text" value="100"/> (range: 20~1000)</p> <p>RTS/CTS Threshold: <input type="text" value="2347"/> (range: 1500~2347)</p> <p>Fragmentation Threshold: <input type="text" value="2346"/> (range: 256~2346, even numbers only)</p> <p>DTIM: <input type="text" value="1"/> (range: 1~255)</p> <p>Wireless Mode: 802.11b+g+n <input type="text"/></p> <p>Station Number: <input type="text" value="0"/> (range: 0~31, 0 means no limit)</p>						
11n Settings	<p>Channel Bandwidth: 20/40 MHz <input type="text"/></p> <p>Extension Channel: below the control channel <input type="text"/></p> <p>Guard Interval: AUTO <input type="text"/></p> <p>MCS: AUTO <input type="text"/></p>						
SSID Settings	<p>SSID index: 1 <input type="text"/></p> <p>SSID: Ralink_AP <input type="text"/></p> <p>Broadcast SSID: <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Use WPS: <input checked="" type="radio"/> Yes <input type="radio"/> No</p>						
WPS Settings	<p>WPS state: Unconfigured</p> <p>WPS mode: <input type="radio"/> PIN code <input checked="" type="radio"/> PBC</p> <p><input type="button" value="Start WPS"/></p> <p>WPS progress: Idle</p> <p><input type="button" value="Reset to OOB"/></p> <p>Authentication Type: OPEN <input type="text"/></p>						
WDS Settings	<p>WDS Mode: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated</p> <p>WDS Peer MAC #1: <input type="text" value="00:00:00:00:00:00"/></p> <p>WDS Peer MAC #2: <input type="text" value="00:00:00:00:00:00"/></p> <p>WDS Peer MAC #3: <input type="text" value="00:00:00:00:00:00"/></p> <p>WDS Peer MAC #4: <input type="text" value="00:00:00:00:00:00"/></p>						
Wireless MAC Address Filter	<p>Active: <input type="radio"/> Activated <input checked="" type="radio"/> Deactivated</p> <p>Action: Allow <input type="text"/> the follow Wireless LAN station(s) association.</p> <p>Mac Address #1: <input type="text"/></p> <p>Mac Address #2: <input type="text"/></p> <p>Mac Address #3: <input type="text"/></p> <p>Mac Address #4: <input type="text"/></p> <p>Mac Address #5: <input type="text"/></p> <p>Mac Address #6: <input type="text"/></p> <p>Mac Address #7: <input type="text"/></p> <p>Mac Address #8: <input type="text"/></p>						
<input type="button" value="SAVE"/> <input type="button" value="CANCEL"/>							

Figure 5.3

5.3.1.2. Multiple SSID'S Settings

SSID Index, SSID: The SSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change the default name to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the SSID as the device, in order to get connected to your network.

Broadcast SSID: Select **Yes** to hide the SSID in so a station cannot obtain the SSID through passive scanning. Select **No** to make the SSID visible so a station can obtain the SSID through passive scanning.

Authentication Type: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers highly secure data encryption, known as WEP.&WPA. If you require high security for transmissions, there are two alternatives to select from: **64-bit WEP and 128-bit WEP**. WEP 128 will offer increased security over WEP 64.

You can disable or enable with WPA or WEP for protecting wireless network. The default type of wireless is **disabled** and to allow all wireless computers to communicate with the access points without any data encryption

5.3.1.3. Wireless MAC Address Filter

The MAC filter screen allows you to configure the router to give exclusive access to up to 32 devices (Allow Association) or exclude up to 32 devices from accessing the router (Deny Association). Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:AA:BB:00:00:02. You need to know the MAC address of the devices to configure this screen. To change your router's MAC filter settings, click Wireless LAN, MAC Filter to open the MAC Filter screen. The screen appears as shown.

Active: Select **Activated** to enable MAC address filtering.

Action: Define the filter action for the list of MAC addresses in the MAC address filter table. Select **Deny Association** to block access to the router, MAC addresses not listed will be allowed to access the router. Select **Allow Association** to permit access to the router, MAC addresses not listed will be denied access to the router.

MAC Address: Enter the MAC addresses (in XX:XX:XX:XX:XX:XX format) of the wireless station that are allowed or denied access to the router in these address fields.

5.3.1.4 WEP

Key 1 to Key 4: Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless must be the same as the router. There are four keys for your selection. input format is in HEX style, 5 and 13 HEX codes are required for and 128-bitWEP respectively.

If you chose WEP 64-bits, then enter any 5 ASCII characters or 10 hexadecimal characters ("0-9", "a,b,c,d,e,f").

If you chose WEP 128-bits, then enter 13 ASCII characters or 26 characters ("0-9", "a,b,c,d,e,f"). You must configure all four keys, but key can be activated at any one time. The default key is key 1.

5.3.1.5 WPA-PSK

Encryption: TKIP (Temporal Key Integrity Protocol) utilizes a stronger encryption method and incorporates Message Integrity Code (MIC) to provide protection against hackers.

Pre-Shared key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

The WPS Hardware Push Button and LED behaviors are defined as below:

- 1) Physical push button is pressed down and holds until the LED starts flashing, WPS starts to process and the LED will flash.
- 2) Push button (in the web UI) is pressed, WPS starts to process and the LED will flash.
- 3) Once the PIN is entered, WPS starts to process and the LED will flash.
- 4) Once the connection is successfully established between the router and the client, the LED will remain in solid for 5 seconds to tell the users that the connection has been established.
- 5) After 5 seconds, the LED will light off to indicate users that the router is ready for a new WPS connection

5.3.2 APPLY WIRELESS AP

After you changed wireless parameters in wireless section, press "**Save**" button can apply the changes.



RESET TO DEFAULT SETTING

6

6. RESET TO DEFAULT SETTING

If you are experiencing difficulty logging on to the configuration page (For example: you forget the password), you can reset the ADSL MODEM to the default configuration, Then you will be able to log on with the default username and password.

Method:

- 1) Turn on the ADSL MODEM.
- 2) Keep pressing the RESET BUTTON for 6 seconds.
- 3) Release the RESET BUTTON when the PC light off.
- 4) Done.

SPECIFICATION

7

7. SPECIFICATION

7.1 POWER SUPPLY

- Exterior power adapter
- Input: 110VAC, 60Hz
- Output: 12VDC, 500mA.
- Polarity: 

7.2 STANDARDS

- EMI/Immunity: FCC Part 15 Class B, CE Mark (EN55022 Class B/EN50082)
- Safety Standard: UL, EN60950, 3C
- Communication: FCC Part 68, CYR21
- Electromagnetic: in accordance with FCC, ETSI and CISPR standard

7.3 ENVIRONMENT REQUIREMENTS

- Temperature: 5°C – 40°C (41F – 104F)
- Relative humidity: 30% – 90%
- Electromagnetic disturbance: FCC PART15&68

APPENDIX

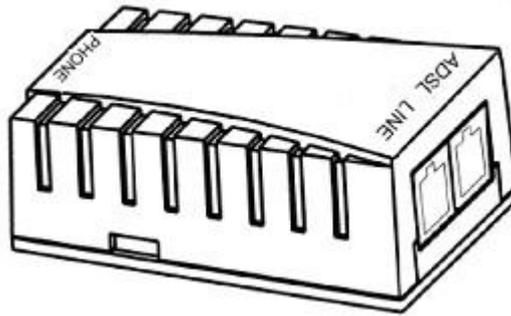
APPENDIX

APPENDIX A. TROUBLESHOOTING

Phenomena	Solution
The indicator of power supply is not on	<ol style="list-style-type: none"> 1. Make sure the connection of power supply is good. 2. Make sure the switch of power supply is turned on. 3. Make sure the output of power supply is correct.
The indicator of LAN is not on	<ol style="list-style-type: none"> 1. Check the connection between the cable and the network card. 2. Make sure that the correct cable is used. 3. Make sure the cable works fine by pinging the host IP address.
Can not access Internet or remote networks	<ol style="list-style-type: none"> 1. Make sure the problems listed above are eliminated. 2. Make sure the software configuration of the ADSL Modem is correct. 3. Make sure you have restarted the ADSL Modem after configuration change. 4. Check IP connection using ping command. 5. Make sure the DNS of the computer is correct.
Can't access some web server	<ol style="list-style-type: none"> 1. The MTU of operating system might be too large. 2. Some operating systems might need to be patched.
Can not log on to the configuration page	<ol style="list-style-type: none"> 1. Make sure the LAN indicator is on. 2. Make sure the configuration of TCP/IP is correct. 3. Make sure the data indicator of Modem is on when using Ping command. 4. Make sure the user name and password is correct. 5. Reset the device.

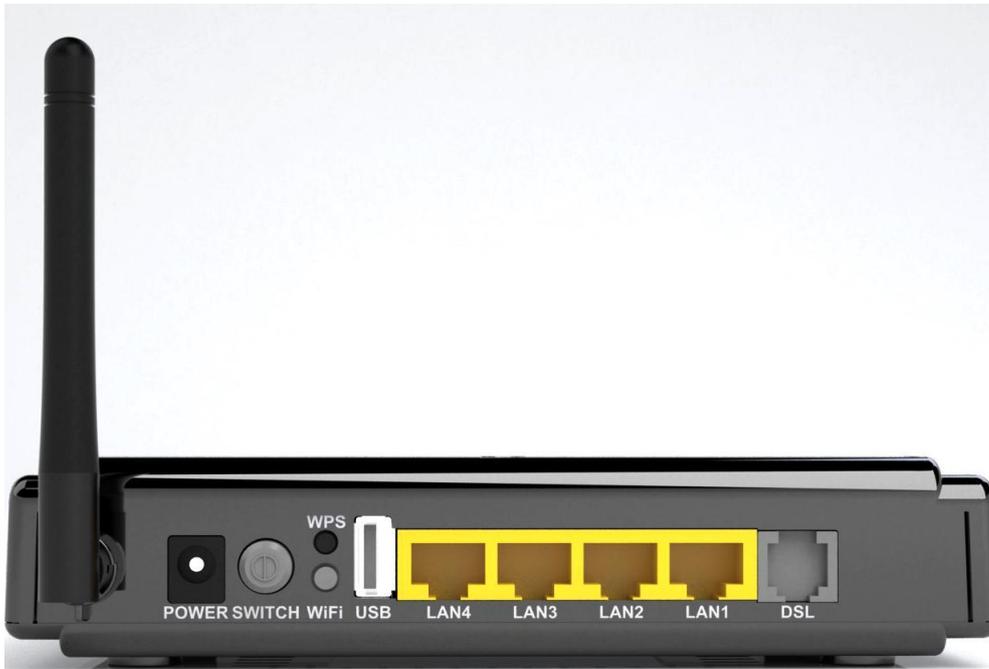
APPENDIX B. SPLITTER CONNECTION

1. Splitter



2. Connection

Firstly, use a telephone cord to connect the LINE port of the splitter and the RJ-11 port (the phone jack) on the wall. Then use another telephone cord to connect the ADSL port of the splitter and the LINE port of the ADSL Modem. Finally, use another telephone cord to connect the telephone set and the PHONE port of the splitter.



APPENDIX C. CONFIGURATION OF TCP/IP PROTOCOL

Here we will explain the configuration which using Windows 2000 operation system as an example. For other operation systems the process is similar.

1. Right click on the “Local Area Connection”, click “Properties” on the pop up menu, as shown in Figure C.1.

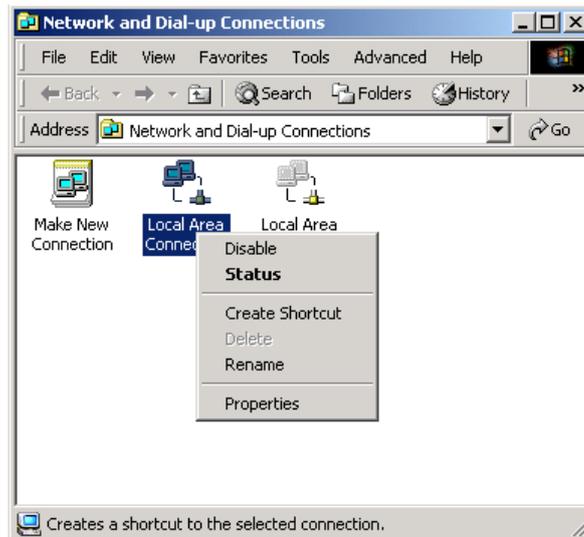


Figure C.1

2. The dialog box of networks is shown in Figure C.2. On the “**General**” property page select “**Internet Protocol(TCP/IP)**”, and then click the “**Properties**” button.

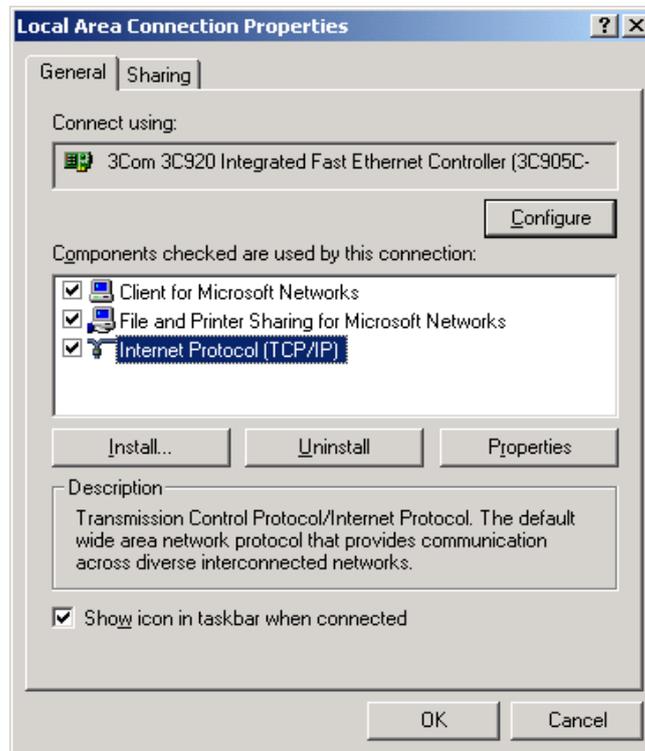


Figure C.2

3. The “**Internet Protocol (TCP/IP) properties**” pop up window is shown as Figure C.3. Select “**Use the following IP address**”. Input the following IP address: 192.168.1.11 and subnet mask: 255.255.255.0 (These addresses and subnet mask are similar with the factory default setting. The user can set different IP address and subnet mask whenever necessary). Select “**Gateway**”, input the default IP address of the gateway: 192.168.1.1 and IP address of Preferred DNS server: 202.96.209.133 (you can use your ISP’s address), IP address of Alternate DNS server: 202.96.209.5(you can use your ISP’s address). The result is

shown in Figure C.3.

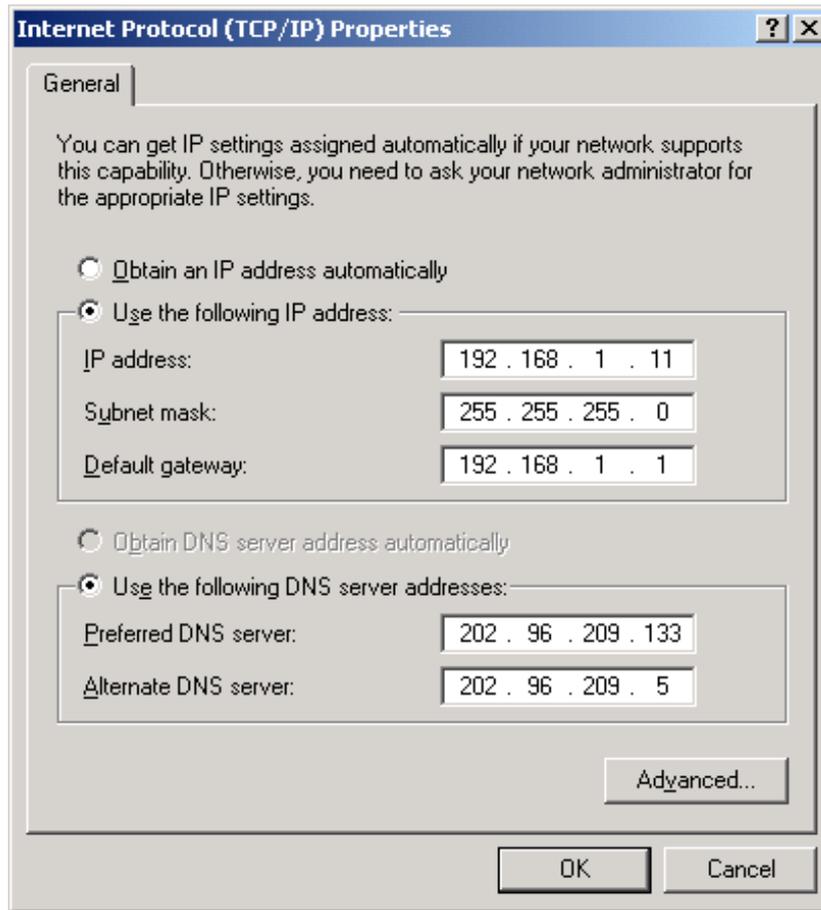


Figure C.3

4. Click “OK” button to return to the “**Local Area Connection Property**” dialog box.
5. Click “OK” button to close the Network property dialog box.

APPENDIX D. SHIPPING LIST

Make sure the following items are included in the box. If any one of them is missing, please contact the vendor immediately.

ADSL MODEM	× 1
User Manual	× 1
Telephone Line(RJ-11)	× 2
Power Adapter	× 1
Cable Cat5 RJ45	× 1
Splitter	× 1

FCC INFORMATION

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.
- For product available in the USA market, only channel 1~11 can be operated. Selection of other channels is not possible.
- This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter..

THIS DEVICE MUST NOT BE CO-LOCATED OR OPERATING IN CONJUNCTION WITH ANY OTHER ANTENNA OR TRANSMITTER

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Federal Communications Commission (FCC) Requirements, Part 15

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.

REGULATORY INFORMATION / DISCLAIMERS

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government

CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

MPE Statement (Safety Information)

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

SAFETY INFORMATION

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.



Please use the factory recommended power supply.