

# Orion 3000

## Wireless LAN Cable Modem

*User's Guide*

*Rev. 1.2a*

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# 1. Before You Begin

Your new wireless cable modem provides high-speed wireless access to the Internet by using IEEE 802.11b wireless standard and an active Internet Connection through your cable service provider. This user guide describes how to set up and use the wireless cable modem. Before installing the wireless cable modem, you should read this user guide to ensure proper wireless cable modem operation.

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## Understand the Wireless Cable Modem's Features

Your wireless cable modem has the following features to help you access and use the Internet:

- Wireless connectivity means that you can use your PC just about anywhere in your home.
- 802.11b compliance ensures interoperability with other 802.11b compliant devices
- Your wireless cable modem supports transmission rates of 11, 5.5, 2, and 1 Mbps. If the signal becomes weak, your wireless cable modem will automatically fall back to the optimal transmission rate.
- Two-way design allows the wireless cable modem to send and receive data over the cable television network.
- Cable bandwidth allows data rates of up to 38 megabits per second (Mbps)\*, which is faster than analog modems, integrated services digital network (ISDN), or asymmetric digital subscriber line (ADSL).
- Using your cable line means that the wireless cable modem is always on, always connected, and doesn't tie up your phone line.
- Plug-and-play operation through universal serial bus (USB) ensures easy setup and installation.
- Data Over Cable Service Interface Specification (DOCSIS™) compliance ensures interoperability with DOCSIS compliant cable operators.

*\*NOTE: Speeds may vary based on the following factors:*

- *Computer equipment including available RAM and processor speed*
- *Software applications utilizing your computer's resources*
- *Network traffic depending on the time of day*
- *Limitations set by your Cable Service Provider*

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## Contact Your Local Cable Operator

Before installing your new wireless cable modem, you must contact your local cable service provider to activate your Internet account. Be sure to have the wireless cable modem's MAC address available, which can be found on the underside of the wireless cable modem.

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## Prepare Your Area for Wireless Cable Modem Installation

Before installing your wireless cable modem, you should first prepare your area. To do this:

1. Locate your cable outlet and ensure that it is located within proper distance of your wireless cable modem and computer. Be sure not to bend the cable as this may strain the connector and cause damage.
2. Place wireless cable modem as high as possible. Allow sufficient airflow around the wireless cable modem to prevent overheating.
3. Place wireless cable modem and wireless clients in open areas or far away from transformers, heavy-duty motors, microwave ovens, refrigerators, fluorescent lights, and other manufacturing equipment.
4. Ensure that the temperature in the room where the wireless cable modem will be operating is between 0 and 40°C (32 and 104°F)
5. The wireless signal may be weaker after it has passed through metal, concrete, brick, walls, or floors. Also, make sure that the wireless cable modem and wireless adapters are positioned so that the signal will travel straight through a wall or ceiling for better reception. For example, a wall that is 1 foot thick, at a 45-degree angle appears to be almost 2 feet thick.

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## Gather Supplied and Required Items

You will use a variety of items to install your wireless cable modem. Some of the items are supplied with your wireless cable modem.

### Supplied

Verify that these items were included in the cable modem's package:

- Wireless cable modem
- Power adapter
- USB cable (1.5m)
- Ethernet cable (1.8m)
- CD containing:
  - USB drivers

- Wireless client drivers
- Wireless LAN Utility
- This user guide

## Not Supplied

Verify that these items are available before beginning the installation:

- If using the wireless cable modem's USB port:
  - A PC running Windows 98® Second Edition (SE), Windows Me, Windows 2000, or Windows XP. The cable modem's USB setup does not support the Macintosh® operating system, Windows 98 First Edition, and NT.
  - Windows 98 SE, Windows Me, Windows 2000, or Windows XP CD or diskettes.
  - An active USB port on your PC.
- If using the wireless cable modem's Ethernet port:
  - A PC running Windows 95 (or later) operating system or a Macintosh computer running system 7.6 (or later) operating system
  - An active Ethernet port on your PC or Macintosh
- If using the wireless cable modem's Wireless feature:
  - A PC running Windows 95 (or later) operating system or a Macintosh computer running system 7.6 (or later) operating system
  - An active wireless client on your PC or Macintosh

Be sure to follow the instructions provided for the port that you want to use.

Using the Wireless feature of your wireless cable modem is the simplest and quickest way to connect your PC or MAC to the Internet. All you need is an 802.11b wireless client that is connected to your PC or MAC. Depending on your cable service provider, you may be able to connect multiple wireless clients to your wireless cable modem.

Using the USB port allows you to install the wireless cable modem more quickly and easily than using the Ethernet port, because you do not have to install and configure a network interface card (NIC).

USB, however, only enables you to connect one computer to the wireless cable modem. Using the Ethernet port allows you connect multiple computers to a wireless cable modem through the use of additional equipment which is not included. Please contact your cable service provider for more information on using multiple computers.

Chapter 2 provides instructions for installing your wireless cable modem using the Wireless feature.

Chapter 3 provides instructions for installing your wireless cable modem using the USB port.

Chapter 4 provides instructions for installing your wireless cable modem using the Ethernet port.

## 2. Installing the Modem Using Wireless

This chapter explains the process for installing your wireless cable modem using the wireless feature. First you will install the hardware (wireless cable modem, wireless client (not included), coax cable (not included), and power adapter).

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### Installing the Hardware

This section explains how to connect the wireless cable modem to the computer, wall cable outlet, and electrical outlet. To install the hardware:

1. Power off the computer
2. Connect one end of the coaxial cable to the wireless cable modem's cable connector. Connect the other end of the coaxial cable to the cable wall outlet. Be sure not to bend or over tighten the cables as this may strain the connector and cause damage. If you plan to connect the wireless cable modem and television to the same wall outlet, you must use a cable line splitter (not included).
3. Plug the wireless cable modem's power adapter into the wireless cable modem's power jack and into an electrical outlet or surge protector.
4. Follow the installation and configuration instructions included with your wireless client.
5. You are now ready to use your cable modem.

### Troubleshooting the Wireless Installation

#### The WLAN LINK LED is not lit.

- Verify that your Wireless PC Card or Wireless USB client is properly connected to your computer.
- Try positioning the computer closer to the wireless cable modem. The wireless signal may be weaker after it has passed through metal, concrete, brick, walls, or floors. Make sure that the wireless cable modem and wireless adapters are positioned so that the signal will travel straight through a wall or ceiling for better reception. For



example, a wall that is 1 foot thick, at a 45-degree angle appears to be almost 2 feet thick.

- Make sure PC's wireless client is connecting to right WLCM. Check the SSID of the WLCM and wireless client.

### **3. Installing the Wireless Cable Modem Using the USB Port**

This chapter explains the process for installing your cable modem using the USB port. First, you will install the hardware (cable modem, USB cable, coax cable, and power adapter). You will then install the cable modem drivers and verify that the modem is functioning properly.

*NOTE: The cable modem's USB setup does not support the Macintosh® operating system, Windows 95 & NT.*

Using the USB port allows you to install the cable modem more quickly and easily than using the Ethernet port, because you do not have to install and configure a network interface card (NIC).

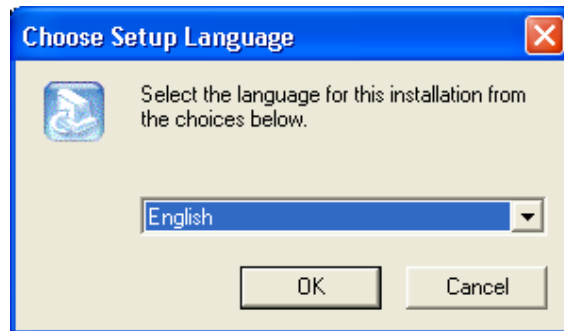
USB, however, only enables you to connect one computer to the cable modem. Using the Ethernet port allows you to connect multiple computers to a cable modem through the use of additional equipment which is not included. Please contact your cable service provider for more information on using multiple computers.

#### **Installing the Software Drivers Before Hardware Connection**

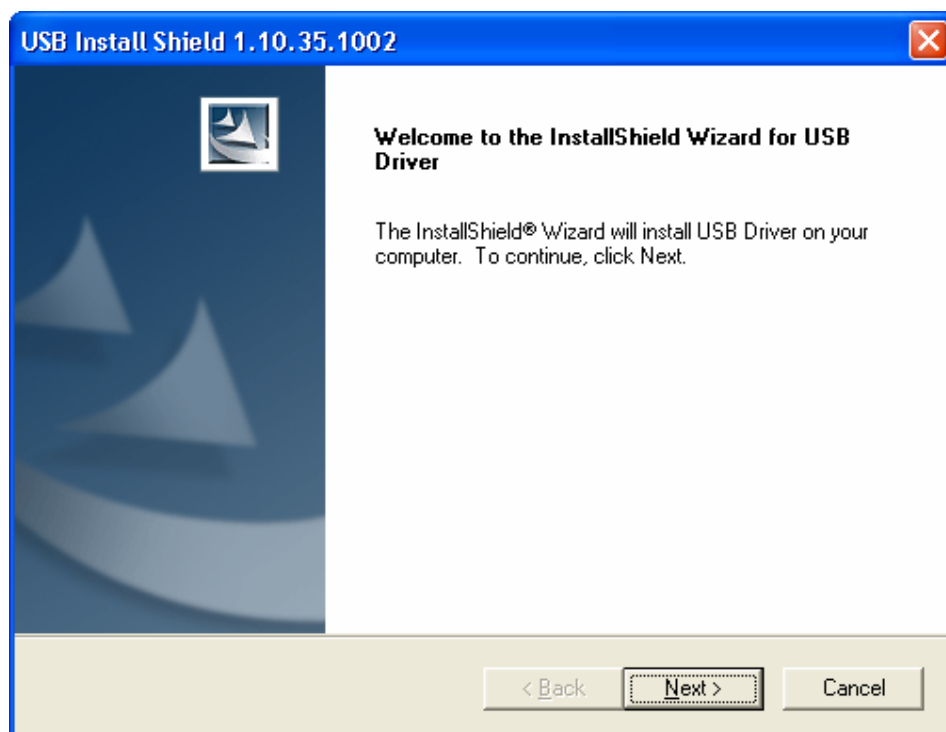
**CAUTION: You should run the “Setup.exe” program first before you connect USB cable to PC.**

To install the cable modem software drivers using the Windows operating system:

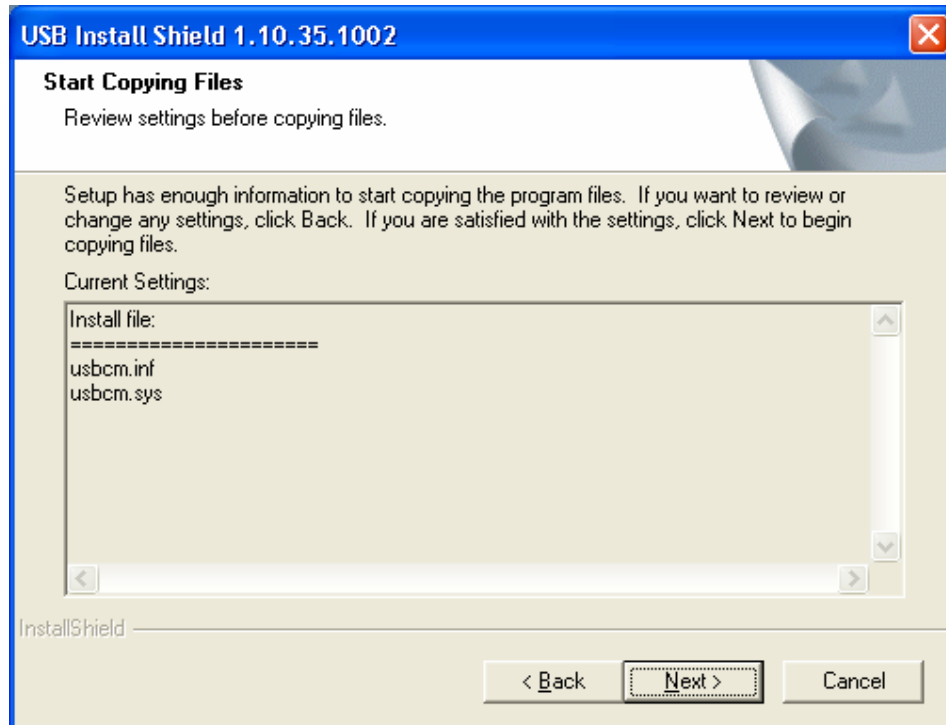
1. Double click the “Setup.exe” program in the CD.
2. Then the “Choose Setup Language” screen appears. You can choose the language you need and click “OK”.



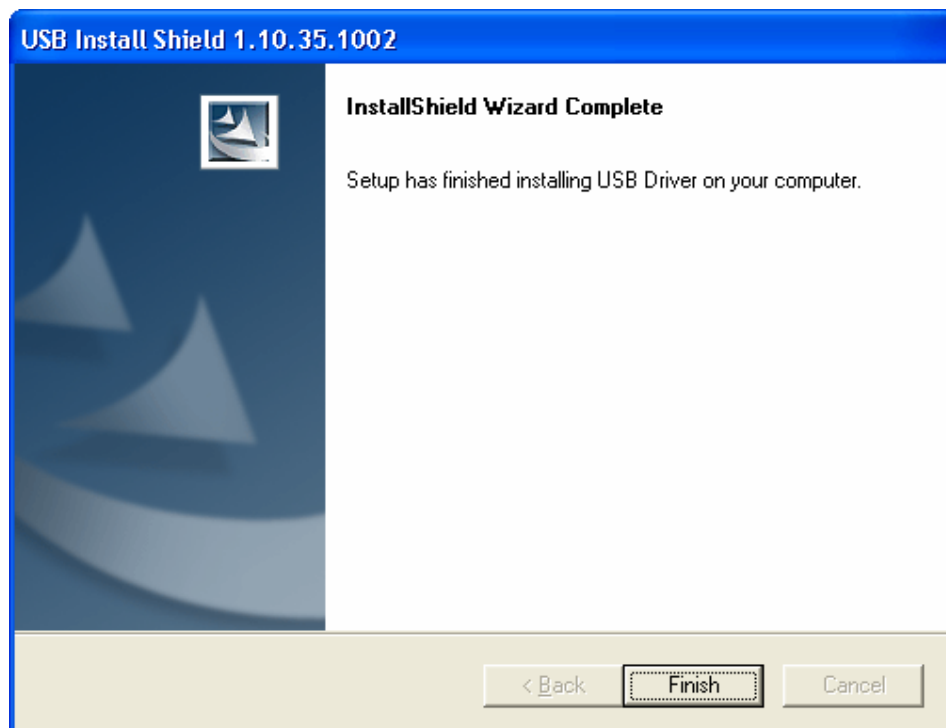
3. You will see the following Welcome screen.



4. Click "Next>". You will see the following Start screen.



5. Click "Next>". You will see the following 'Complete' screen.



6. Click "Finish". You will see below screen, and then select 'Yes.' Now you can connect the

USB cable to the PC by following next section instructions.

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## Installing the Hardware

This section explains how to connect the cable modem to the computer, wall outlet, and electrical outlet.

To install the hardware:

1. Power off the computer
2. Connect one end of the coaxial cable to the cable modem's cable connector. Connect the other end of the coaxial cable to the cable wall outlet. Be sure not to bend or over tighten the cables as this may strain the connector and cause damage. If you plan to connect the cable modem and television to the same wall outlet, you must use a cable line splitter (not included).
3. Connect one end of the USB cable to the cable modem's USB port and the other end of the cable to the USB port on the PC.
4. Plug the cable modem's power adapter into the cable modem's power jack and into a wall outlet or surge protector.
5. You are now ready to install the software drivers.

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## Installing the Software Drivers

This section explains how to install the software drivers that your PC requires for the cable modem to operate.

### Installing the Software Drivers in Windows 98 SE Operating System

**CAUTION: You must install the drivers located on the CD that ships with your cable modem. If you use the default Windows-supplied software drivers, you will not be able to properly install the cable modem.**

To install the cable modem software drivers using the Windows 98 operating system:

1. Power on your PC. After your computer boots, Windows detects the cable modem. The Found New Hardware screen appears, followed by the Add New Hardware Wizard screen.



2. Insert the CD into the PC's CD-ROM and click *Next*. You will see the following screen.



3. Select *Search for the best driver for your device (Recommended)*. Then select *Next*. You will see the following screen.



4. Check the *CD-ROM drive* check box and verify that the CD is in the CD-ROM drive. Click *Next* to have Windows search for the necessary driver files. You will see the following.



5. Select *the updated driver (Recommended) Ambit USB Cable Modem* and click next. You will see the following screen.

**CAUTION:** You must verify that **Ambit USB Cable Modem** appears on the screen. If **USB Composite Device** appears, you must click *Back* twice and specify the

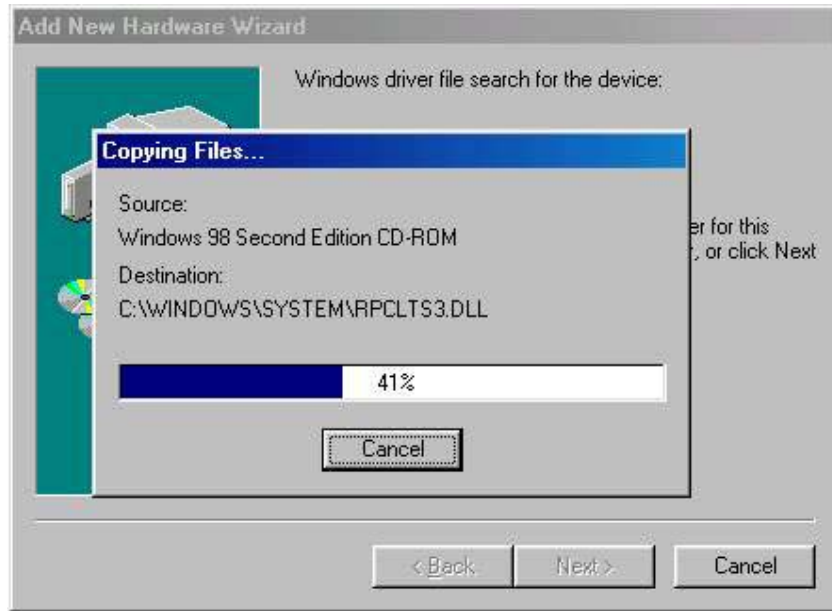
correct location of the driver files. **DO NOT** proceed if USB Composite Device is displayed in the above window. Contact your cable provider for further assistance.



6. Click *Next*. The computer automatically installs the necessary driver files. You may see the following screen.



7. If the above screen appears, you must insert the Windows 98 CD so that Windows can copy the remaining files.



8. After files copying is done, you will see the following screen:



9. Click *Finish* to complete the installation. You will see the following screen.





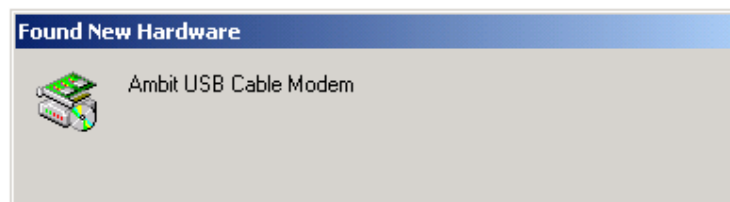
10. Choose *Yes* to restart your computer.
11. After the computer is rebooted, verify that the USB LED is lit on the front of you cable modem. If not, refer to the troubleshooting section later in this chapter.

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## Installing the Software Drivers in Windows Me Operating System

To install the cable modem software drivers using the Windows Me operating system:

1. Power on your PC. After your computer boots, Windows detects the cable modem. The Found New Hardware screen appears, followed by the Found New Hardware Wizard screen.



2. Insert the CD into the PC's CD-ROM and click *Next*. You will see the following screen.



3. Select *Automatic search for a better driver (Recommended)* and click *Next*. The computer automatically copies the necessary driver files from the CD. You will see the following screen.



4. Click *Next*. The computer automatically installs the necessary driver files.



5. Click *Finish* after the computer has copied the necessary files. You will see the following screen.



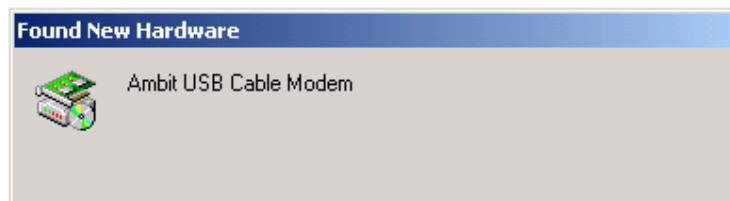
6. Click *Yes* to restart the computer

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## Installing the Software Drivers in Windows 2000 Operating System

To install the cable modem software drivers using the Windows 2000 operating system:

1. Power on your PC. After your computer boots, Windows detects the cable modem. The Found New Hardware screen appears, followed by the Found New Hardware Wizard screen.



2. Insert the CD into the PC's CD-ROM Drive and click *Next*. You will see the following screen.
- 3.



4. Select *Search for a suitable driver for my device (recommended)*. Then select *Next*. You will see the following screen



5. Check the *CD-ROM drive* check box and verify that the CD is in the CD-ROM drive. Click *Next* to have Windows locate the necessary driver files. You will see the following screen.



6. Click *Next* to install the driver files for the cable modem. You will see the following screen.



7. Click *Finish* to complete the installation.
8. After the installation is completed, verify that the USB LED is lit on the front of you cable modem. If not, refer to the troubleshooting section later in this chapter.

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## Installing the Software Drivers in Windows XP Operating System

1. Power on your PC. After your computer boots, Windows detects the cable modem. The Found New Hardware screen appears, followed by the Found New Hardware Wizard screen.



2. Choose *the software automatically (Recommended)*. Click *Next* to continue. You will see the following screen.







3. Click *Finish* to complete the installation.

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## Troubleshooting the USB Installation

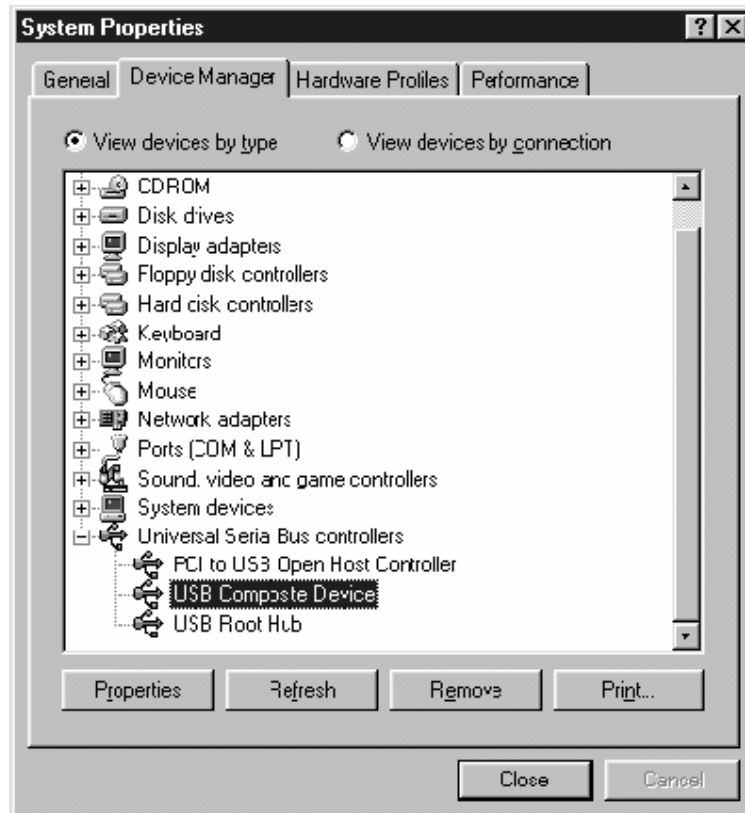
### **None of the LEDs are on when I power on the Wireless LAN Cable Modem.**

Check the connection between the power adapter and the cable modem. Power off the Wireless LAN Cable Modem and wait for 5 Seconds and power on the modem again. If the problem still exists, you may have a hardware problem.

### **When attempting to install the USB driver in Windows 98 SE, I receive the following error message: Device not installed at this time. Driver not found.**

This usually occurs when the wrong driver has been installed. To remove the wrong driver and install the correct driver:

1. Right-click on the *My Computer* icon on your desktop and choose *Properties*.
2. Click the *Device Manager* tab
3. Click the plus sign next to *Universal Serial Bus controllers* to view the list of installed USB device drivers



4. Select *USB Composite Device* and click *Remove*
5. Click *Refresh*

The Add New Hardware Wizard window appears, displaying the device name *USB Composite Device*. Refer to the proper operating system instructions in this chapter for information on reinstalling the driver properly.

**All of the LEDs on the front of my modem look correct, but I cannot access the Internet.**

- If the POWER, USB, SYNC, and READY are solidly lit, the cable modem is working properly. Use the following procedures to verify connectivity between the PC and the cable modem:
  - Launch Your PC's Internet Browser (e.g., Netscape, IE)
  - Enter <http://192.168.100.1> into your browser. This URL connects you directly to the web server within your cable modem. A successful connection indicates that the PC is able to communicate with the cable modem. The next step is to enter a public URL to ensure connectivity between the cable modem and your cable service provider. If this fails, please contact your cable service provider for further assistance.
- Try restarting the computer so that it could re-establish a connection with the cable

modem.

- Power cycle the cable modem by removing the power adapter from the electrical outlet and plugging it back in. Wait several minutes for the cable modem to re-establish communications with your cable service provider.
- Remove any other USB devices from your computer and connect the cable modem's USB cable directly to the USB port on your computer.
- If you are using a cable splitter, try removing the splitter and connect the cable modem directly to the cable wall outlet. Wait several minutes for the cable modem to re-establish communications with your cable service provider.
- Your USB or coaxial cable may be damaged. Try using another cable.
- If none of these suggestions work, contact your cable service provider for further assistance.

## **Uninstalling the USB Driver**

1. Insert the supplied CD into your CD-ROM drive
2. Click on the *My Computer* icon on your desktop. Then click on the icon that belongs to your CD-ROM Drive.
3. Locate the file called "Uninstall" and click on the file. This program will remove all the necessary files from you computer.

## **4. Installing the Modem Using the Ethernet Port**

This chapter explains the process for installing your wireless cable modem using the Ethernet port. Using the Ethernet port allows to you connect multiple computers to a wireless cable modem through the use of additional equipment which is not included. Please contact your cable service provider for more information on using multiple computers.

See Chapter 2 "Installing the Wireless Cable Modem Using the USB Port" for instructions on installing the wireless cable modem using the USB port.

You can use the wireless cable modem's Ethernet port if you have:

- A PC running Windows 95 (or later) operating system or a Macintosh computer running system 7.6 (or later) operating system
- An active Ethernet port on your PC

Before you begin, verify that your Network Interface Card (NIC) has been installed and configured for use with your wireless cable modem. The wireless cable modem requires TCP/IP to be installed. Contact your cable service provider for assistance with installing and

configuring TCP/IP. After installed the hardware, your computer can connect the wireless cable modem directly by using Network Interface Card. Unlike USB installation, there is no needed for software installation for the Ethernet connection.

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## Installing the Hardware

This section explains how to connect the wireless cable modem to the computer, wall cable outlet, and electrical outlet.

To install the hardware:

1. Power off the computer
2. Connect one end of the coaxial cable to the wireless cable modem's cable connector. Connect the other end of the coaxial cable to the cable wall outlet. Be sure not to bend or over tighten the cables as this may strain the connector and cause damage. If you plan to connect the wireless cable modem and television to the same wall outlet, you must use a cable line splitter (not included).
3. Connect one end of the Ethernet cable to the wireless cable modem's Ethernet port and the other end of the cable to the Ethernet port on the PC or network interface card (NIC).
4. Plug the wireless cable modem's power adapter into the wireless cable modem's power jack and into a wall outlet or surge protector.
5. If the POWER, ENET, SYNC, and READY LEDs are solidly lit, the wireless cable modem is working properly.

---

## Troubleshooting the Ethernet Installation

### **None of the LEDs are on when I power on the Wireless LAN Cable Modem.**

Check the connection between the power adapter and the cable modem. Power off the Wireless LAN Cable Modem and wait for 5 seconds and power on the modem again. If the problem still exists, you may have a hardware problem.

### **The ENET LED on my wireless cable modem is not lit.**

- Try restarting the computer so that it could re-establish a connection with the wireless cable modem.
- Check for a resource conflict (Windows users only). To do this:
  - 1) Right-click on the *My Computer* icon on your desktop and choose *Properties*.
  - 2) Click the *Device Manager* tab and look for a yellow exclamation point or red

X over the NIC in the *Network Adapters* field. If you see either one, you may have an IRQ conflict. Refer to the manufacturer's documentation or your cable service provider for further assistance.

- Verify that TCP/IP is the default protocol for your network interface card (NIC)
- Power cycle the wireless cable modem by removing the power adapter from the electrical outlet and plugging it back in. Wait several minutes for the wireless cable modem to re-establish communications with your cable service provider.
- Your Ethernet cable may be damaged. Try another cable.

**All of the LEDs on the front of my modem look correct, but I cannot access the Internet.**

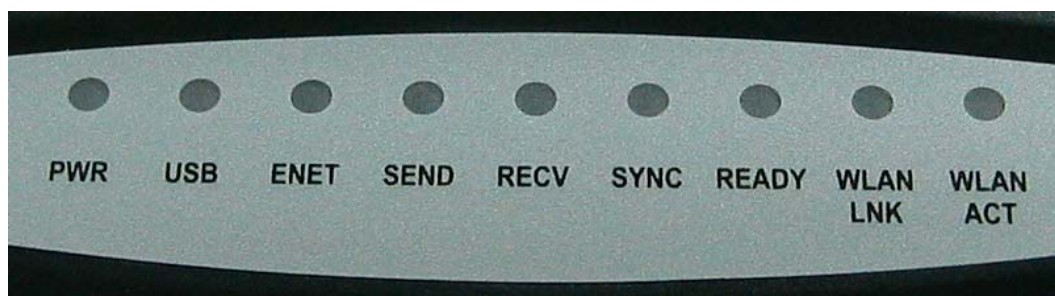
- If the POWER, ENET, SYNC, and READY LEDs are solidly lit, the wireless cable modem is working properly. Try restarting the computer so that it could re-establish a connection with the wireless cable modem.
- Power cycle the wireless cable modem by removing the power adapter from the electrical outlet and plugging it back in. Wait several minutes for the wireless cable modem to re-establish communications with your cable service provider.
- If your PC is connected to a hub or gateway, try connecting the PC directly into the wireless cable modem.
- If you are using a cable splitter, try removing the splitter and connect the wireless cable modem directly to the cable wall outlet. Wait several minutes for the wireless cable modem to re-establish communications with your cable service provider.
- Your Ethernet or coaxial cable may be damaged. Try using another cable.
- If none of these suggestions work, contact your cable service provider for further assistance.

## **5. Wireless Cable Modem LEDs and Connectors**

This chapter describes the functions of the wireless cable modem's LEDs and connectors. When the PWR, SYNC, and RDY LEDs are lit, the wireless cable modem is working properly. The USB or ENET LED should also be lit depending on what port is being used. The following provides an overview of the LED indicator lights on the front of the wireless cable modem and what the LEDs mean.

---

### **LEDs on the Front of the Modem**



- **PWR:** Indicates that the wireless cable modem has successfully completed internal power-on tests.
- **USB:** Indicates connectivity between the USB port on the wireless cable modem and the PC's USB port.
- **ENET:** Indicates connectivity between the Ethernet port on the wireless cable modem and the Ethernet port on the PC or Mac. This LED blinks when the wireless cable modem is transferring or receiving data over the Ethernet cable.
- **SEND:** Indicates that data is being transmitted from the wireless cable modem to the cable network.
- **RECV:** Indicates that data is being received from the cable network.
- **SYNC:** Indicates the connection status between the wireless cable modem and the cable network. The LED is lit when the wireless cable modem has established a downstream channel with the cable service provider's Cable Modem Termination System (CMTS).
- **READY:** Indicates that the wireless cable modem has completed the ranging/registration process and is ready to send/receive data.
- **WLAN LNK:** Indicates that a wireless client(s) is linked to the wireless cable modem.
- **WLAN ACT:** This LED blinks when the wireless cable modem is transferring or receiving data with the wireless clients.

Installation problems with the wireless cable modem are commonly due to the cable network and its topography. LEDs on the front panel of the wireless cable modem reveal operational status and help you determine problem areas.

---

## Connectors on the Back of the Modem

This list of connectors describes where to connect the cables and power adapter when installing the wireless cable modem.



1. **ENET Port:** This is where you plug the included Ethernet cable. The other end connects to the Ethernet Jack on the PC or NIC. This is not needed when using the USB port or wireless feature.
2. **USB Port:** This is where you plug the included USB cable. The other end connects to the USB port on your PC. This is not needed when using the Ethernet port or wireless feature.
3. **CABLE Connector:** This is where you connect the coaxial cable (not included) that leads to the cable splitter (not included) or the cable wall outlet.
4. **PWR:** This is where you plug the include power adapter. Remember to use only the power adapter that came with the wireless cable modem.

## 6. Product Specifications

This chapter describes the cable modem's operating and hardware specifications.

Item	Downstream (Receiver)	Upstream (Transmitter)
Frequency Range	88MHz ~ 860MHz	5MHz ~ 42MHz
Channel Bandwidth	DOCSIS: 6MHz	200K, 400K, 800K, 1.6M, 3.2MHz
Modulation	64QAM/256QAM	QPSK/16QAM
Symbol Rate	5.057/5.361 Msymbols/sec	160, 320, 640, 1280, 2560 Ksymbols/sec
Data Rate	30Mbps/sec (64QAM) 43Mbps/sec (256QAM)	0.32 ~ 5.12Mbps (QPSK) 0.64 ~ 10.24Mbps (16QAM)
Input Output Power	-15dBmV ~ +15dBmV	+8dBmV ~ +58dBmV (QPSK) +8dBmV ~ +55dBmV (16QAM)
Carrier To Noise Ratio @BER<10 <sup>-8</sup>	64QAM: 23.5dB, 256QAM: 30dB	
RF Cable Interface	75Ω F-type female connector	
PC Host Interface	Ethernet, USB cable, 802.11b wireless	
Power Dissipation	< 6 Watts	
MAC, LLC/SNAP, IP and CPE Filter	DOCSIS-RFI	
ARP, ICMP, IP, TCP/UDP, IGMPv2	RFC826, RFC792, RFC791, RFC768/793 RFC2236	Internet Protocol Stack
DHCP, TFTP, ToD client	RFC2131/2132, RFC1350, RFC867	Applications for Provisioning usage
SNMP v2c	RFC1905	SNMP Protocol

MIBs Support	RFC1213, RFC2011, RFC2012, RFC2013, RFC2669, RFC2670, RFC2233, RFC1907, RFC1493, draft-ietf-ipcdn-mcns-bpi-mib-01	MIB-2, Interface and Cable, Security MIB support
Syslog client	Send event to syslog server	

Description	Specification
Dimensions (H x W x D)	2.0 x 13.0 x 19.5cm
AC Power (Input)	Linear: AC 100 ~ 120 Volt (50 ~ 60 Hz) or AC 220 ~ 240 Volt (50 ~ 60 Hz) Switching: AC 100 ~ 240 Volt (Optional)
Power Consumption	8 to 10W
Temperature	Operating: 32°F to 104°F (0°C to 40°C) Non-operating: 14°F to 158°F (-10°C to 70°C)
Humidity	5 to 90% non-condensing
Cable Interface	Type F coaxial connector
LAN Interface	Ethernet 10/100BaseT (RJ-45)
USB Interface	USB Series B Connector
Wireless LAN Interface	802.11b
Regulatory Compliance	FCC part 15, UL/CSA C22.2, CB, VCCI



## 7. Telnet commands

The Cable Router telnet Login and Password:

Login:

Password:

*\*\* Note: Default Wireless LAN Cable Modem Router Telnet IP address is 192.168.100.1*

### Getting Help

Entering a question mark (?) at the system prompt displays a list of commands for each command mode. To list keywords or arguments, enter a question mark (?) in place of a keyword or argument. Include a space before the ?. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the command, keywords, and arguments you already have entered.

CM>?	
debug	Debugging functions
undebug	Disable debugging functions
image	Image commands
ping	Ping specified IP address
pwd	Change password
user-level	Change User's access right
show	Show commands
nvr	NVRAM command
tftp	Display/Set TFTP information
dhcp	NAT DHCP commands
nat	NAT commands
interface	Interface commands
ip	IP commands
web-access	Web access control command
access-list	Access list command
copy	Copy command
write	Write configuration to nvram
reset	Reboot Cable Modem
quit	Disconnect

To list keywords or arguments, enter a question mark (?) in place of a keyword or argument. Include a space before the ?. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the command, keywords, and arguments you already have entered. This example shows what the **show ?** command displays on an Ambit Cable router:

```
CM>show ?
config-file      Display all options in Configuration file
dhcp             Display all options in DHCP response
version          Display system version information
arp              Display ARP table
ip               Display IP configuration
interface        Display interface information
running-config   Display Cable Router configuration
cpe-info         Display CPE information
downstream       Display current downstream information
upstream         Display current upstream information
nat              Show NAT commands
user             List login user(s)
access-list      Display access list information
```

To complete a partial command, keyword, or argument use the <Tab> key. This example shows what how <Tab> key works:

```
CM>show inter<Tab>
CM>show interface
```

### Redisplaying a command

To redisplay a command you previously entered, press the up-arrow key. You can continue to press the up-arrow key for more commands.

## Debug

### ➤ **debug**

Display corresponding message, the protocol debug just show packet information send to or receive from RF interface.

CM>**debug ?**

console	Display console message
ip	IP information
dhcp	DHCP protocol information
arp	ARP information
l2	Layer 2 information
nat	NAT translation information

CM>**debug ip ?**

tcp	TCP information
udp	UDP information
icmp	ICMP information
rip	RIP protocol information

Example:

CM>**debug ip tcp**

```
TCP:  rcvd src:10.0.0.3(1150)  dst:172.17.100.134(23)  chksum:F368
TCP:  Seq#:1711689473  Ack#:1591494822  dataOffset:20  Flags:10(h)
TCP:  rcvd src:172.17.100.134(23)  dst:10.0.0.3(1150)  chksum:7587
TCP:  Seq#:1591494822  Ack#:1711689473  dataOffset:20  Flags:18(h)
TCP:  rcvd src:10.0.0.3(1150)  dst:172.17.100.134(23)  chksum:F368
TCP:  Seq#:1711689473  Ack#:1591494977  dataOffset:20  Flags:10(h)
TCP:  rcvd src:172.17.100.134(23)  dst:10.0.0.3(1150)  chksum:DC13
```

### ➤ **undebug**

Disable debug function

CM>**undebug ?**

console	Disable console message
ip	IP information
dhcp	DHCP protocol information
arp	ARP information
l2	Layer 2 information
nat	NAT translation information
all	Disable all debugging functions

## Image

### ➤ **image upgrade {1|2}**

Download the specified firmware image name from TFTP server and store in as “image 1” or “image 2”. If *{1|2}* is not specified, cable modem will upgrade the other image. (If cable modem boot with image 2, it will upgrade image 1)

*Example:*

**CM>image upgrade 1**

Downloading ram.compress from 172.146.1.177

.....

Download file size=596407

Board ID is U10C005.00.01\_JP01

Compatible list is U10C005.00.01\_US01

Match compatible list

Update image 1...

Reboot Cable Modem...

➤ **image use {1|2}**

Activate and boot with the firmware stored in “image 1” or “image 2”.

## Ping

➤ **ping {IP address} [-t]**

Ping specified IP address. When [-t] parameter is specified, continually ping until Ctrl-C or Ctrl-Z is pressed. The Ctrl-C key ceases ping and display summery results of ping test. The Ctrl-Z key pauses ping test and display summery results collect from the beginning of ping test.

*Example:*

**CM>ping 92.146.1.254 -t**

Pinging 92.146.1.254 with 64 bytes of data:

Reply from 92.146.1.254: bytes=64 time=10ms TTL=255 seq=0

Reply from 92.146.1.254: bytes=64 time=10ms TTL=255 seq=1

Reply from 92.146.1.254: bytes=64 time=10ms TTL=255 seq=2

Reply from 92.146.1.254: bytes=64 time=10ms TTL=255 seq=3

Reply from 92.146.1.254: bytes=64 time=20ms TTL=255 seq=4

Reply from 92.146.1.254: bytes=64 time=10ms TTL=255 seq=5

Control-C Pressed...

Ping statistics:

Packets sent: 6; received: 6; Lost: 0 (0% loss)

Round trip time in milli-seconds:

Minimum time: 0ms; Maximum time: 20ms; Average time: 11ms

## Password

➤ **pwd {user name}**

Change the password of accessing Telnet command.

*Example:*

CM>**pwd admin**

Old password:

New password:

Reconfirm:

Change password successfully.

## User-Level

➤ **user-level [user name] {1-90}**

Change the password of accessing Telnet command.

*Example:*

CM>**user-level admin 90**

password:

Change user admin access level to 90.

Change user access level successfully.

## Show

➤ **show config-file**

Display all options declared in DOCSIS that apply to modem got configuration file.

*Example:*

CM>**show config-file**

Network Access: ON

DOCSIS 1.0 Class of Service:

Class ID: 1

Maximum Upstream Channel Transmit Burst : 25000

CM MIC: F1 70 FC 50 47 29 B1 63 E1 93 C4 D1 81 16 2E EC

CMTS MIC: 74 EC 20 12 3F F1 27 89 B7 C6 EE A8 0D B2 6E 68

➤ **show dhcp**

Display all options provided in DHCP response.

*Example:*

CM>**show dhcp**

TFTP Server IP address: 92.146.1.250

Cable Modem IP address: 10.146.1.31

Configuration file: chard.cfg

Lease time: 18000 (secs)

UTC time offset: 28800 (secs)

System Log Server IP address: 92.146.1.254

Router IP address: 10.146.1.254

Subnet Mask: 255.255.0.0

➤ **show version**

Display hardware and software reversion and board ID.

*Example:*

CM>**show version**

Hardware revision: 4.3

Board ID: T60C237.30.01\_TW

Serial number: T10245000489

Bootcode revision: 3.5.7

Software revision: 5.8.2003

Web Page revision: 1.0.1

Software build time: Nov 26 2002 17:57:19

➤ **show ip route**

Display routing table

*Example:*

CM>**show ip route**

Route Table:

Index	Destination	Net Mask	Gateway	Metric	Static
1	10.0.0.0	255.0.0.0	172.17.100.254	3	RIP
2	172.17.0.0	255.255.0.0	172.17.100.134	1	connected
3	92.0.0.0	255.0.0.0	172.17.100.254	1	RIP
4	30.0.0.8	255.255.255.248	30.0.0.9	1	connected
5	30.0.0.0	255.0.0.0	30.0.0.9	1	connected

➤ **show interface**

Display interface information

*Example:*

CM>**show interface ?**

ethernet      Display ETHERNET interface information

cable         Display CABLE interface information

usb            Display USB interface information

wireless      Display WIRELESS interface information

➤ **show interface ethernet**

Display ethernet interface configuration

*Example:*

CM>**show interface ethernet**

Interface Ethernet

MAC address: 00D0.5904.5E16

IP address 30.0.0.9 subnet-mask 255.255.255.248  
Link status: link  
Mode: 10Mbps, half-duplex  
RIP status: Enable  
RIP send version: 2

➤ **show interface cable**

Display cable interface information

*Example:*

CM>**show interface cable**

Interface Cable

MAC address: 0008.0E86.1118  
IP address 10.71.135.99 subnet-mask 255.255.240.0

Downstream information

FEC Lock : Locked  
Downstream Frequency : 561000000 Hz  
Downstream Modulation : 64 QAM  
Downstream Interleave Depth : 32  
Downstream Receive Power Level : -1.18 dBmv  
Downstream SNR : 33.28 dB

Upstream information

Upstream Channel ID : 2  
Upstream Transmit Power Level : 36.00 dBmv  
Upstream Symbol Rate : 2560 ksym/sec  
Upstream Frequency : 28688000 Hz  
Upstream Mini-Slot Size : 8

Upstream Burst Descriptor :

	Initial request(1)	Periodic Ranging(3)	Ranging(4)	shortData(5)	longData(6)
Modulation Type	QPSK	QPSK	QPSK	QPSK	QPSK
Differential	off	off	off	off	off
Preamble Length	64	128	128	72	80
Preamble Value	952	896	896	944	936
FEC Error	no FEC	5	5	5	8
FEC Codeword	16	34	34	75	220
Scrambler Seed	338	338	338	338	338
Maximum Burst Size	0	0	0	6	0
Guard Time Size	8	48	48	8	8
Last Codeword	fixed	fixed	fixed	fixed	fixed
Scrambler on/off	on	on	on	on	on

➤ **show interface usb**

Display ethernet interface configuration

*Example:*

CM>**show interface usb**

#### Interface USB

USB-Host MAC address: 0002.8A0E.ECCA  
Speed: 12Mbps  
Link status: disconnect

#### ➤ **show interface wireless**

Display ethernet interface configuration

*Example:*

CM>**show interface wireless**

#### Interface Wireless

Speed: 11Mbps  
SSID: WLCM  
HOST: WLCM  
Channel: 11  
WEP mode: Disable

#### ➤ **show running-configuration**

Display system running information

*Example:*

CM>**show running-configuration**

#### Interface USB

Hardware revision: 4.3  
Board ID: T60C237.30.01\_TW

Bootcode revision: 3.5.7  
Software revision: 5.8.2004

System up time is 0 days 00:32:46  
System time is 2002-11-26 03:41:55

#### Interface Cable

MAC address: 0008.0E86.1118  
IP address 10.71.135.99 subnet-mask 255.255.240.0

#### Downstream information

FEC Lock : Locked  
Downstream Frequency : 561000000 Hz  
Downstream Modulation : 64 QAM  
Downstream Interleave Depth : 32  
Downstream Receive Power Level : -1.34 dBmv  
Downstream SNR : 33.48 dB

#### Upstream information

Upstream Channel ID : 2  
Upstream Transmit Power Level : 36.00 dBmv



Upstream Symbol Rate : 2560 ksym/sec  
Upstream Frequency : 28688000 Hz  
Upstream Mini-Slot Size : 8

#### Upstream Burst Descriptor :

	Initial request(1)	Periodic Ranging(3)	Ranging(4)	shortData(5)	longData(6)
Modulation Type	QPSK	QPSK	QPSK	QPSK	QPSK
Differential	off	off	off	off	off
Preamble Length	64	128	128	72	80
Preamble Value	952	896	896	944	936
FEC Error	no FEC	5	5	5	8
FEC Codeword	16	34	34	75	220
Scrambler Seed	338	338	338	338	338
Maximum Burst Size	0	0	0	6	0
Guard Time Size	8	48	48	8	8
Last Codeword	fixed	fixed	fixed	fixed	fixed
Scrambler on/off	on	on	on	on	on

#### Interface Ethernet

MAC address: 0002.8A0E.ECC8  
IP address 192.168.100.1 subnet-mask 255.255.255.224  
Link status: disconnect

#### Interface USB

USB-Host MAC address: 0002.8A0E.ECCA  
Speed: 12Mbps  
Link status: disconnect

#### Interface Wireless

Speed: 11Mbps  
SSID: Ambit  
HOST: WLCM  
Channel: 11  
WEP mode: Disable

#### Router Configuration

IP Route: Disable

NAT : Enable

NAT public IP configuration : Automatically

NAT public IP address : 68.5.203.15 Subnet Mask : 255.255.254.0

NAT public Gateway IP address : 68.5.202.1

DHCP server enable

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 20 IP

Pool Index	Begin IP	End IP
1	192.168.100.1	192.168.100.21

DHCP server lease time : 1800

Provision assigned DNS 68.4.16.30

Provision assigned DNS 68.6.16.30

Web access control  
CPE interface web access enable.  
Cable interface web access enable.

Access List is empty

➤ **show cpe-info**

Display CPE information

*Example:*

CM>**show cpe-info**

MAC	IP	Port
0003.4793.064B	30.0.0.10	Ethernet

➤ **show downstream**

Display downstream information

*Example:*

CM>**show downstream**

FEC Lock : Locked  
Downstream Frequency : 561000000 Hz  
Downstream Modulation : 64 QAM  
Downstream Interleave Depth : 32  
Downstream Receive Power Level : -1.48 dBmv  
Downstream SNR : 33.28 dB

➤ **show upstream**

Display current upstream information

*Example:*

CM>**show upstream**

Upstream Channel ID : 2  
Upstream Transmit Power Level : 36.00 dBmv  
Upstream Symbol Rate : 2560 ksym/sec  
Upstream Frequency : 28688000 Hz  
Upstream Mini-Slot Size : 8

Upstream Burst Descriptor :

	Initial request(1)	Periodic Ranging(3)	Ranging(4)	shortData(5)	longData(6)
Modulation Type	QPSK	QPSK	QPSK	QPSK	QPSK
Differential	off	off	off	off	off
Preamble Length	64	128	128	72	80
Preamble Value	952	896	896	944	936
FEC Error	no FEC	5	5	5	8

FEC Codeword	16	34	34	75	220
Scrambler Seed	338	338	338	338	338
Maximum Burst Size	0	0	0	6	0
Guard Time Size	8	48	48	8	8
Last Codeword	fixed	fixed	fixed	fixed	fixed
Scrambler on/off	on	on	on	on	on

➤ **show nat config**

Display all settable NAT/PAT information

*Example:*

CM>**show nat config**

NAT : Enable

WAN SETUP :

NAT public IP configuration : Automatically

NAT public IP address : 68.5.203.15 Subnet Mask : 255.255.254.0

NAT public Gateway IP address : 68.5.202.1

LAN SETUP :

Ethernet interface IP address 192.168.100.1 subnet-mask 255.255.255.224

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 20 IP

Pool Index	Begin IP	End IP
------------	----------	--------

1	192.168.100.1	192.168.100.21
---	---------------	----------------

Provision assigned DNS 68.4.16.30

Provision assigned DNS 68.6.16.30

DHCP server lease time : 1800

➤ **show nat timer**

Display all settable NAT/PAT information

*Example:*

CM>**show nat timer**

Aging Timer (second)

ICMP protocol : 5 (secs)

UDP protocol : 1800 (secs)

TCP protocol : 3600 (secs)

GRE protocol : 3600 (secs)

Default Time OUT : 5 (secs)

➤ **show user**

Display all telnet user information

*Example:*

CM>**show user**

Index	User Name	From	Alive(sec)	Idle(sec)
1	admin	192.168.100.2	221	1

➤ **show access-list**

Display access list information

*Example:*

CM>**show access-list**

Access List

ID	Control	Address
41	Permit	00D0.5900.0000, hardware address mask FFFF.FF00.0000
42	Permit	0008.0E00.0000, hardware address mask FFFF.FF00.0000
1	Permit	192.168.100.0, wildcard bits 0.0.0.16
21	Permit	64.168.39.0, wildcard bits 0.0.0.8

## NVRAM

➤ **nvrn factory-default**

Restore cable modem to factory default.

## TFTP

➤ **tftp filename** {file name}

Set the file name of the firmware image to download.

*Example:*

CM>**tftp filename ram.cpr**

Set TFTP filename to "ram.cpr"

➤ **tftp server** {Server IP address}

Establishes the IP address of the TFTP server for firmware download

*Example:*

CM>**tftp server 92.146.1.250**

Set TFTP Server to 92.146.1.250

## DHCP

➤ **dhcp** {enable/disable}

Enable/disable dhcp server

➤ **dhcp lease-time { 30-2147483647 seconds}**

Set dhcp server ip lease time

➤ **dhcp dns add {1~4} {ip address}**

Set dhcp server dns ip address, it allows maximum 4 dns setting.

➤ **dhcp dns delete {1~4/all}**

Remove dhcp server dns ip address setting.

*Note: if NAT is enabling, the following DHCP command can be set*

➤ **dhcp ip-pool add {start IP} {end ip}**

Set dhcp server ip pool range

*Example:*

CM> **dhcp ip-pool add 192.168.100.2 192.168.100.4**

CM>**show dhcp**

TFTP Server IP address : 172.19.89.19

Cable Modem IP address : 10.71.135.99

Configuration file : DEF001.cfg

Lease time : 86400 (secs)

UTC time offset : -28800 (secs)

SystemLog Server IP address : 172.19.89.19

Router IP address : 10.71.128.1

SubnetMask : 255.255.240.0

DHCP server enable

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 3 IP

Pool Index	Begin IP	End IP
1	192.168.100.2	192.168.100.4

Provision assigned DNS 68.4.16.30

Provision assigned DNS 68.6.16.30

DHCP server lease time : 1800

➤ **dhcp ip-pool delete {1-20/all}**

Delete dhcp server ip pool range

➤ **dhcp reserve-mac add {ip address} {mac address}**

Reserve the specific ip address for specific mac address

*Example:*

CM>**dhcp reserve-mac add 192.168.100.4 0002.8A25.251D**

CM>**show dhcp**

TFTP Server IP address : 172.19.89.19

Cable Modem IP address : 10.71.135.99

Configuration file : DEF001.cfg

Lease time : 86400 (secs)

UTC time offset : -28800 (secs)

SystemLog Server IP address : 172.19.89.19

Router IP address : 10.71.128.1

SubnetMask : 255.255.240.0

DHCP server enable

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 3 IP

Pool Index	Begin IP	End IP
1	192.168.100.2	192.168.100.4

NAT DHCP Server MAC reserved Table :

NAT DHCP Server support 16 reserved MAC address:

Index	Begin IP	MAC address
1	192.168.100.4	0002.8A25.251D

Provision assigned DNS 68.4.16.30

Provision assigned DNS 68.6.16.30

DHCP server lease time : 1800

➤ **dhcp reserve-mac delete {1-16|all}**

Delete one reserved mac address or all

## Interfaces

➤ **interface ethernet address {ip address} mask {subnet netmask}**

Set ethernet interface IP address

*Example:*

CM>**interface ethernet address 192.168.100.1 mask 255.255.255.224**

CM>**show interface ethernet**

Interface Ethernet

MAC address: 0002.8A0E.ECC8

IP address 192.168.100.1 subnet-mask 255.255.255.224

Link status: disconnect

➤ **interface ethernet dhcp-relay {ip address|enable|disable}**

Ethernet interface dhcp-relay

- **interface ethernet mac-address** *{mac address}*

Assign mac-address for ethernet interface

CM>**interface ethernet mac-address 0008.0E86.1118**

CM>**show interface ethernet**

Interface Ethernet

MAC address: 0008.0E86.1118

IP address 192.168.100.1 subnet-mask 255.255.255.224

Link status: disconnect

- **interface ethernet shutdown**

Ethernet interface shutdown

- **interface ethernet startup**

Ethernet interface startup

- **interface cable upstream channel** *{id}*

Change upstream channel ID

- **interface cable downstream preset** *{frequency}*

Add frequency to downstream frequency preset table

- **interface cable shutdown**

Cable interface shutdown

- **interface cable startup**

Cable interface startup

- **interface wireless shutdown**

Wireless interface shutdown

- **interface wireless startup**

Wireless interface startup

- **interface wireless ssid** *{ssid name}*

Set Wireless LAN Cable Router Access Point SSID name

Example:

CM>**interface wireless ssid Ambit**  
Set SSID to Ambit

➤ **interface wireless host** *{host name}*  
Set Wireless LAN Cable Router Access Point host name

Example:

CM>**interface wireless host Conference-Room**  
Set host to Conference-Room

➤ **interface wireless channel** *{1~11}*  
Set Wireless LAN Cable Router Access Point channel

Example:

CM>**interface wireless channel 11**  
Set Channel to 11

➤ **interface wireless wep** *{64bits|128bits} key (xxxxxxxx|xxxxxxxxxxxxxxxx)*  
Set Wireless LAN Cable Router Access Point wep key

Example:

CM>**interface wireless wep 64bits key 1122334455**  
Set Wireless LAN Cable Router Access Point 64bits wep key to 1122334455

➤ **interface wireless wep disable**  
Disable Wireless LAN Cable Router Access Point wep key

## NAT

Network Address Translation/Port Address Translation (NAT/PAT) gateway is designed for IP address simplification and conservation, as it enables private IP network that uses no registered IP addresses to connect to the Internet. NAT/PAT operates on a wireless LAN cable modem, connecting to Internet, and translates the private (not globally unique) addresses in the internal network into legal addresses before packets are forwarded onto the Internet. As part of this functionality, NAT can be configured to advertise only one address for the entire network to the outside world. This provides additional security, effectively hiding the entire internal network from the world behind that address. NAT has the dual functionality of security and address conservation, and is typically implemented in remote access environments.



- **ip nat {enable/disable}**  
Enable/disable NAT/PAT gateway function
- **nat timer {tcp/udp/gre/icmp} {1~86400 sec}**  
Set aging time for different protocol session

### **One to one mapping**

- **nat static ipmapping add { private ipaddress} { global ipaddress}**  
Set NAT one to one mapping table

Example:

CM>**nat static ipmapping add 68.5.203.16 192.168.100.22**

Set global IP 68.5.203.16 to private IP 192.168.100.22

CM>**show nat config**

NAT : Enable

WAN SETUP :

NAT public IP configuration : Automatically

NAT public IP address : 68.5.203.15 Subnet Mask : 255.255.254.0

NAT public Gateway IP address : 68.5.202.1

LAN SETUP :

Ethernet interface IP address 192.168.100.1 subnet-mask 255.255.255.224

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 20 IP

Pool Index	Begin IP	End IP
1	192.168.100.1	192.168.100.21

Provision assigned DNS 68.4.16.30

Provision assigned DNS 68.6.16.30

DHCP server lease time : 1800

IP Mapping Table:

Index	Global IP	Local IP
1	68.5.203.16	192.168.100.22

- **nat static ipmapping delete {index/all}**  
Remove NAT one to one mapping entry  
*index*: The index number in one to one mapping table (see “show nat config” command )

### **Port forwarding setting**

- **nat static portmapping add {index} { private ipaddress} {port} {protocol}**

Set NAT/PAT Port forwarding table

**CM>nat static portmapping add 21 192.168.100.23 ftp**

**CM>show nat config**

NAT : Enable

WAN SETUP :

NAT public IP configuration : Manually

Static NAT public IP address : 68.5.203.15 Subnet Mask : 255.255.254.0

Static NAT public Gateway IP address : 68.5.202.1

LAN SETUP :

Ethernet interface IP address 192.168.100.1 subnet-mask 255.255.255.224

NAT DHCP Server Pool Table :

NAT DHCP server support 20 IP pools

NAT DHCP server support 512 IP, Created 20 IP

Pool Index	Begin IP	End IP
1	192.168.100.1	192.168.100.21

DNS server(1) 68.6.16.30

DHCP server lease time : 1800

IP Mapping Table:

Index	Global IP	Local IP
1	68.5.203.16	192.168.100.22

Port Mapping Table:

Index	Port	Local IP	Protocol
1	21	192.168.100.23	ftp

➤ **nat static portmapping delete {index/all}**

Remove the entry from the portmapping table

Example:

**CM>nat static portmapping delete 1**

Delete static portmapping index 1

### **NAT static ip**

➤ **nat static ip {enable|disable|ipaddress}**

Enable/disable NAT/PAT gateway function or assign global ip

Example:

**CM>nat static ip disable**

Static IP will be disabled after "reset" command.

Example:

CM>**nat static ip enable**

Static IP will be enabled after "reset" command.

- **nat static ip** *{ipaddress}* **mask** (*mask*)  
Set static IP and network mask for NAT/PAT

Example:

CM>**nat static ip 68.5.203.15 mask 255.255.254.0**

Set NAT public IP to 68.5.203.15, subnet mask to: 255.255.254.0

### **NAT static gateway**

- **nat static gateway** *{ipaddress}*  
Set static router address

Example:

CM>**nat static gateway 68.5.202.1**

Set NAT public Gateway IP to 68.5.202.1

CM>**show nat config**

NAT : Enable

WAN SETUP :

NAT public IP configuration : Manually

Static NAT public IP address : 68.5.203.15    Subnet Mask : 255.255.254.0

Static NAT public Gateway IP address : 68.5.202.1

## Management

- **web-access cpe** *{enable|disable}*  
Enable/disable the CM web access via CPE interface

- **web-access cable** *{enable|disable}*  
Enable/disable the CM web access via Cable interface

- **access-list** *{1~20|21~40|41~60|61~75}* *{deny|permit}* *{any|source IP|mac address}*  
*[wildcard bit]*

The standard access list performs packet filtering based on source IP address from the CPE host(s).

The management access list performs packet filtering based on destination IP address matching the

Wireless LAN Cable Router IP address. The standard MAC access list performs frame filtering based on source MAC address from the CPE host(s). Basically, the access list works as a source address packet filter, if the access list is empty, the cable router will forward any packet, if access list is not empty, packet filtering will be enforced according to the access list(s). The wireless MAC access list performs filtering based on source MAC address from the wireless card, configure this list will make only the wireless card's MAC address match this list will be associate to wireless AP.

- 1~20, access list ID, for standard IP access list
- 21~40, access list ID, for management access list
- 41~60, access list ID, for standard MAC access list
- 61~75, access list ID, for Wireless MAC access list

*Example:*

1) Set the access list to permit source IP 192.168.100.xxx to access network.

**CM>access-list 1 permit 192.168.100.1 0.0.0.255**

Note: 0.0.0.255 means 192.168.100.1~192.168.100.255

2) Set the access list to permit source IP 192.168.100.10 to access cable router (telnet, web-page, snmp)

**CM>access-list 21 permit 192.168.100.10 0.0.0.0**

Note: No network packet will be filtered

3) Set the access list to permit source MAC 00D0.5921.3354 to access network

**CM>access-list 41 permit 00d0.5921.3354 ffff.ffff.ffff**

Note: The cable router only forward packet with this source MAC, all other packet will be discarded.

4) Set the access list to permit source MAC 00D0.5911.22.33 to associated the wireless Cable Router

**CM>access-list 61 permit 00d0.5911.2233**

➤ **access-list delete** *{list ID|all}*

Delete a specific access-list or delete all access-list

➤ **pppoe-forwarding** *{enable|disable}* (Optional)

To enable|disable PPPoE packet pass-through the NAT gateway

➤ **copy tftp:config** *{tftp server ip address}* *{configuration filename}*

Download the Wireless Cable Router configuration from remote tftp server. The configuration file must be text file.

➤ **write**

Write configuration to NVRAM

➤ **reset**

Reboot cable modem

➤ **quit**

Disconnect telnet.

## 8. Web User Interface

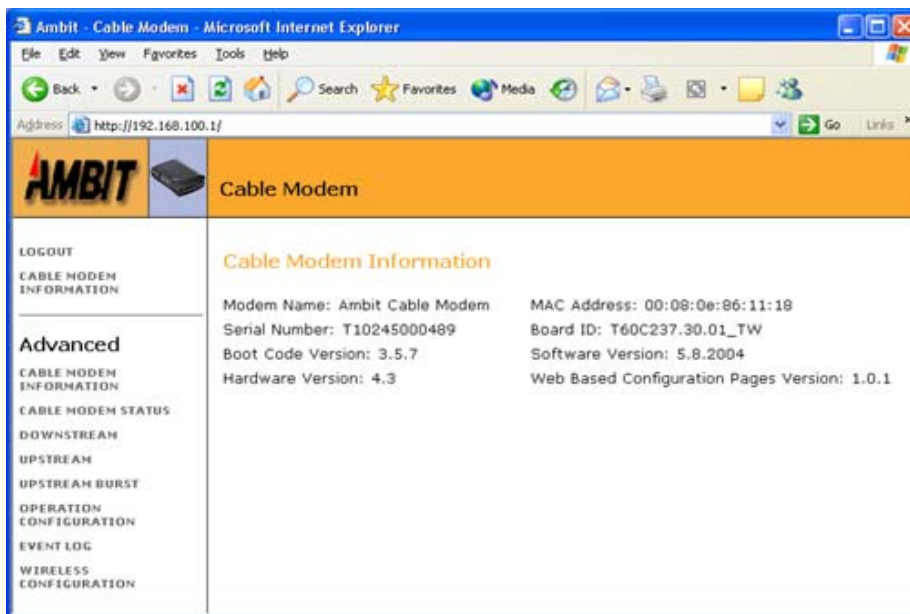
### Accessing the Web User Interface

1. The PC connected to the wireless cable modem must support TCP/IP connection and dynamic DHCP IP address acquisition, and must have a web browser installed.
2. Open the web browser and set the URL location as: `http://192.168.100.1`

### Web User Interface Home Page

A main menu is shown at the top of the pages and the user can select different options to view wireless cable modem information. The main menu contains 8 categories of wireless cable modem information. They include:

#### Cable Modem Information

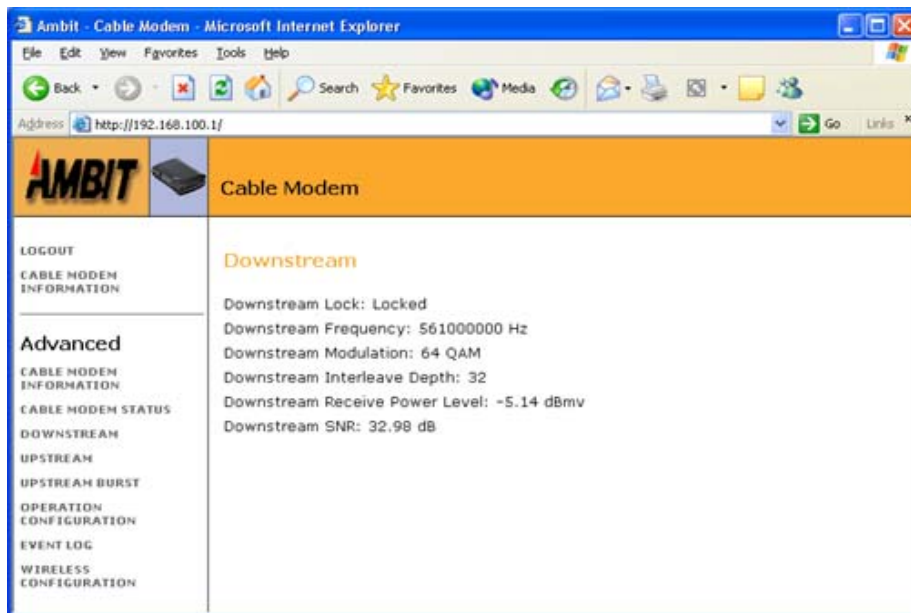


## Cable Modem Status

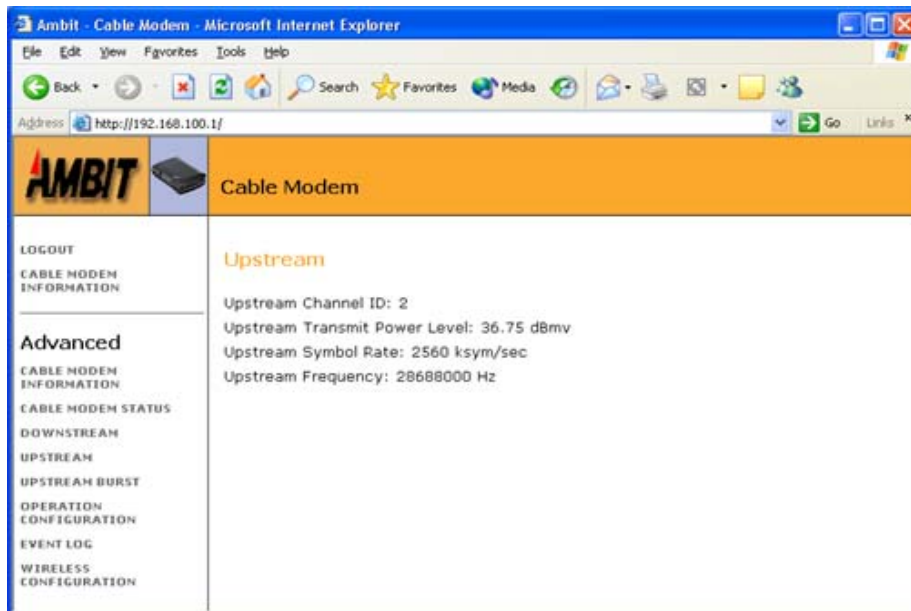
The screenshot shows a web browser window titled "Ambit - Cable Modem - Microsoft Internet Explorer". The address bar displays "http://192.168.100.1/". The page features the Ambit logo and a "Cable Modem" header. A left sidebar contains a menu with options: LOGOUT, CABLE MODEM INFORMATION, Advanced, CABLE MODEM INFORMATION, CABLE MODEM STATUS (highlighted), DOWNSTREAM, UPSTREAM, UPSTREAM BURST, OPERATION CONFIGURATION, EVENT LOG, and WIRELESS CONFIGURATION. The main content area, titled "Cable Modem Status", displays a table of tasks and their statuses.

Task	Status
Search for a Downstream Channel	Done
Search for an Upstream Channel	Done
Obtain Upstream Parameters	Done
Establish IP Connectivity using DHCP	Done
Establish Time Of Day	Done
Transfer Operational Parameters through TFTP	Done
Register Connection	Done
Initialize BPI	Not Enable

## Downstream

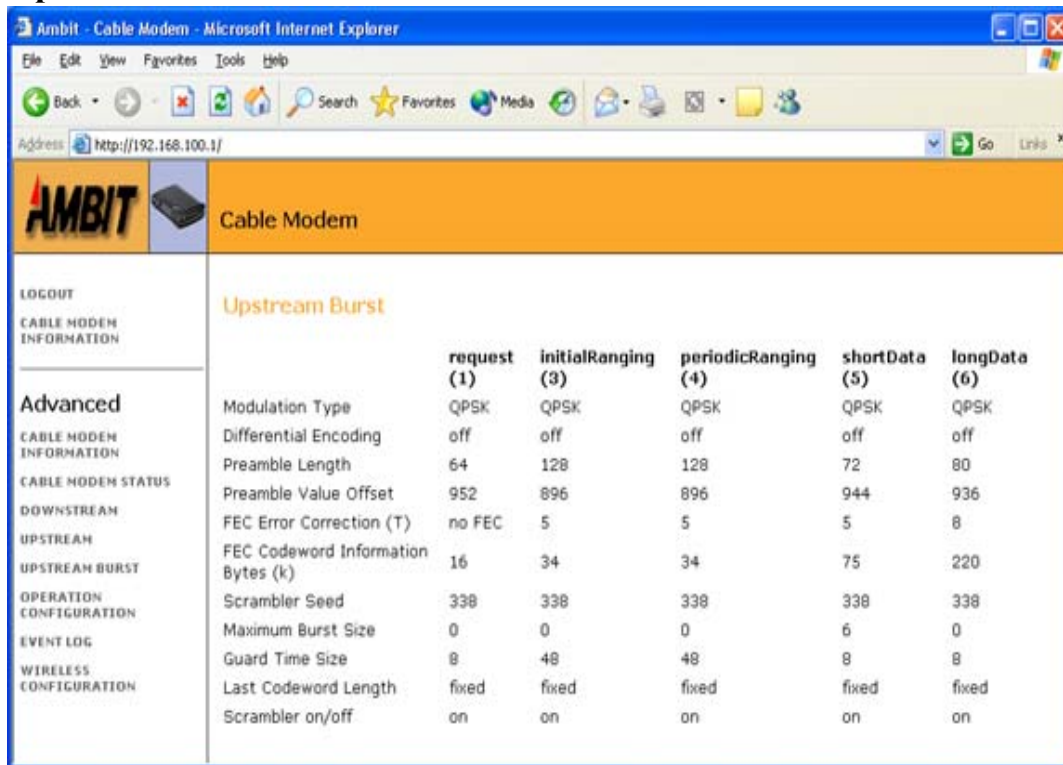


## Upstream





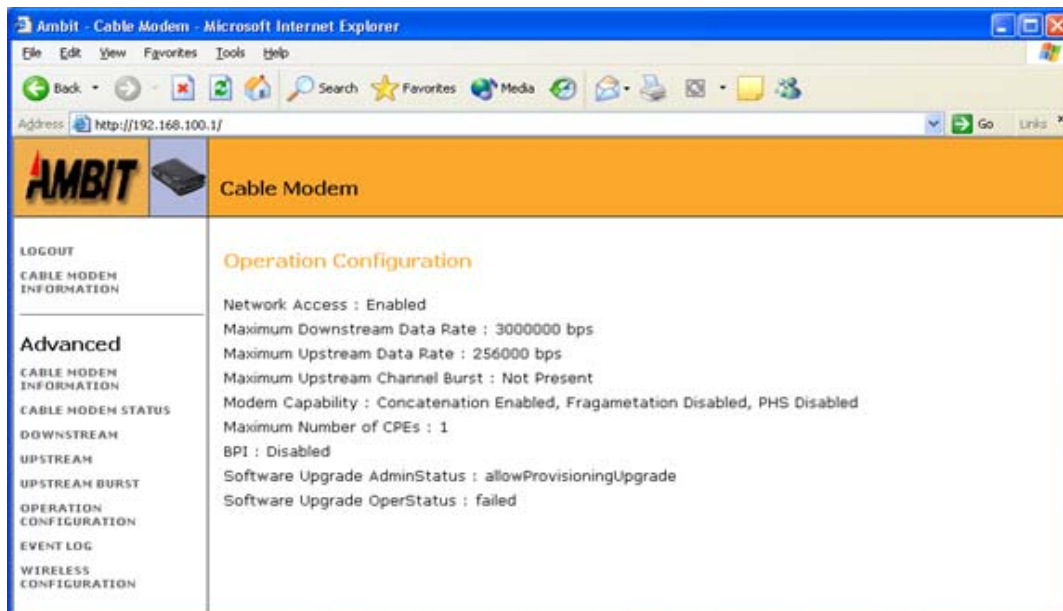
## Upstream Burst



The screenshot shows the Ambit Cable Modem web interface in Microsoft Internet Explorer. The address bar shows <http://192.168.100.1/>. The page title is "Cable Modem". The left sidebar contains a navigation menu with the following items: LOGOUT, CABLE MODEM INFORMATION, Advanced, CABLE MODEM INFORMATION, CABLE MODEM STATUS, DOWNSTREAM, UPSTREAM, UPSTREAM BURST, OPERATION CONFIGURATION, EVENT LOG, and WIRELESS CONFIGURATION. The main content area is titled "Upstream Burst" and displays a table of configuration parameters.

	request (1)	initialRanging (3)	periodicRanging (4)	shortData (5)	longData (6)
Modulation Type	QPSK	QPSK	QPSK	QPSK	QPSK
Differential Encoding	off	off	off	off	off
Preamble Length	64	128	128	72	80
Preamble Value Offset	952	896	896	944	936
FEC Error Correction (T)	no FEC	5	5	5	8
FEC Codeword Information Bytes (k)	16	34	34	75	220
Scrambler Seed	338	338	338	338	338
Maximum Burst Size	0	0	0	6	0
Guard Time Size	8	48	48	8	8
Last Codeword Length	fixed	fixed	fixed	fixed	fixed
Scrambler on/off	on	on	on	on	on

## Operation Parameters



The screenshot shows the Ambit Cable Modem web interface in Microsoft Internet Explorer. The address bar shows <http://192.168.100.1/>. The page title is "Cable Modem". The left sidebar contains a navigation menu with the following items: LOGOUT, CABLE MODEM INFORMATION, Advanced, CABLE MODEM INFORMATION, CABLE MODEM STATUS, DOWNSTREAM, UPSTREAM, UPSTREAM BURST, OPERATION CONFIGURATION, EVENT LOG, and WIRELESS CONFIGURATION. The main content area is titled "Operation Configuration" and displays a list of network and modem parameters.

Network Access : Enabled

Maximum Downstream Data Rate : 3000000 bps

Maximum Upstream Data Rate : 256000 bps

Maximum Upstream Channel Burst : Not Present

Modem Capability : Concatenation Enabled, Framagmetation Disabled, PHS Disabled

Maximum Number of CPEs : 1

BPI : Disabled

Software Upgrade AdminStatus : allowProvisioningUpgrade

Software Upgrade OperStatus : failed

## Event Log

Ambit - Cable Modem - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Search Favorites Media Mail Print View Source

Address http://192.168.100.1/ Go Links

**AMBIT** Cable Modem

LOGOUT  
CABLE MODEM  
INFORMATION

**Advanced**

CABLE MODEM  
INFORMATION

CABLE MODEM STATUS

DOWNSTREAM

UPSTREAM

UPSTREAM BURST

OPERATION  
CONFIGURATION

EVENT LOG

WIRELESS  
CONFIGURATION

**Event Log**

Index	First Time	Last Time	Counts	Level	ID	Text
7	2002-12-23 07:23:04	2003-01-04 10:50:45	3	notice	126	Registration OK
4	2002-12-23 07:23:03	2003-01-04 10:50:44	5	notice	95	E101.0 TFTP configuration file download
5	2002-12-23 07:23:03	2003-01-04 10:50:44	5	notice	94	TFTP success (1488 bytes)
8	2003-01-04 10:50:44	2003-01-04 10:50:44	1	information	110	Cold Start
3	2000-08-17 22:53:14	2003-01-03 08:53:17	5	information	101	Set Syslog server
2	2000-08-17 22:53:10	2003-01-03 08:53:12	5	notice	125	SNMP Event: SNMP agent Start.
6	2002-12-23 07:23:03	2003-01-03 08:53:02	4	information	111	Warm Start
1	2000-08-17 22:53:05	2000-08-17 22:53:09	15	error	26	R02.0 No Ranging Response received, T3 time-out

Reset All Event Log

## Wireless Configuration

AMBIT Cable Modem

Wireless LAN Configuration

SSID : WLCM

HOST : WLCM

Channel : 6

Security WEP : 64 bits

WEP Key : 02 8a 0e e9 dd

Access Permission :

☒ Allow everyone access

☐ Only allow access if on this list

Existing Stations :  Delete

New Stations : 00028a25251d Add

Support rate : 11M 5.5M 2M 1M bps

Card Primary firmware version : 1.1.0

Card AP firmware version : 3.13

Submit

### SSID

- You can input SSID to group your wireless network. The wireless clients that have the same SSID can communicate with others.

### Host

- In Host item, you can define the wireless cable modem name.

### Channel

- There are 11 channels available for US. You also can specific wireless communication channel in Channel section. If there are multiple wireless cable modems or access points in the same area, wireless channels should be well organized to avoid interference. We recommended the adjacent wireless cable modems or access points should be 5 channels apart. For example, WLCM1 is channel 1, then the next cell, WLCM2 should use channel 6.

### Security WEP

- Security WEP (Wired Equivalent Privacy) offers wireless data security. The default WEP setting is “off”. You can enable this function by choosing two types of WEP keys, 64 or 128 bits.

**WEP Key**

- 64 bits WEP requires a 10 Hexadecimal digits key, and 128 bits WEP key needs a 26 Hexadecimal digits key.

**Access Permission**

- Access permission is set for “Allow everyone access” by default.
- If Access Permission is set for “only allow access if on this list”, only CPE with matching MAC address from the list is allowed to access.

**Submit**

- Any configuration changes must be “submit” before changes will occur.