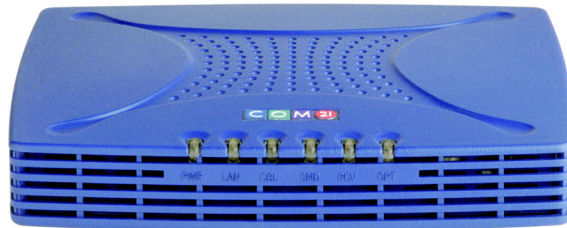




DOXport™ III 10 Cable Modem User's Guide



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Contact Information

If you need help installing your modem, you can contact Com21 by telephone or Internet:

Phone: 888-868-4154

Website: www.com21.com

Important Rules for Safe Operation

Please read and follow the instructions in this manual. Use the AC adapter that is provided with the modem.

FCC Compliance

This DOCSIS cable modem has been tested and found to comply with the limits for a Class B personal computer and peripherals, 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. There is no guarantee that interference will not occur in a particular installation. If this unit does cause harmful interference to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by taking one or more of the following measures:

- Increase the distance between this unit and receiver.
- Connect this unit to a circuit that is isolated from the receiver circuit.

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Introduction

Your DOXport 1110 Cable Modem

Your DOXport 1110 cable modem gives you high-speed, always on access to the Internet through your cable TV (CATV) network. The DOXport 1110 works on any cable system that complies with the Data Over Cable Services Interface Specifications (DOCSIS).

Package Contents

Check the contents of the package. It should contain the items shown in Figure 1.

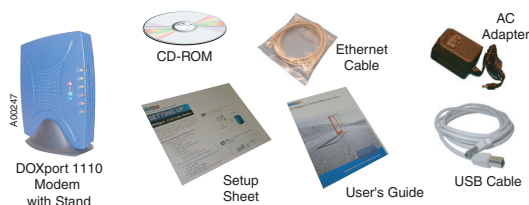


Figure 1. Package Contents

Please contact the place of purchase if any of the above listed items are missing or damaged. If your cable modem was obtained directly from your cable operator, it may have been bulk packaged without the cables, setup sheet, and user's guide.

Before You Start

Before you install your DOXport 1110, you need the following items. These items are not supplied with the DOXport 1110.

1. DOCSIS cable modem service from your local service provider
2. CATV (cable TV) outlet
3. Two-way CATV splitter
4. Two RG6 coaxial cables; one cable connects the CATV outlet to the 2-way splitter and the other cable connects one output of the splitter to your cable modem
5. Computer with 10 Base-T Ethernet LAN port OR computer with functional USB port running Windows 98/Me/2000
6. TCP/IP protocol stack

Installing the Cable Modem

Place your DOXport 1110 cable modem in an area that will not block any of its ventilation holes. In order to hold the modem in an upright position (as shown below), use the included stand.



Figure 2. DOXport 1110 with Detachable Stand

Figure 3 shows the rear panel ports for Ethernet, USB, Power, and RF (cable).



Figure 3. Rear Panel Ports

Table I: DOXport 1110 Rear Panel Ports

Port	Interface
DC	15VDC@1A input
USB	USB 1.1 B-type connector
10/100	10/100 Base-T RJ45
CATV	F-type coaxial connector

The setup sheet provided in your package and/or on the CD provides an illustrated step-by-step procedure for setting up your modem. To summarize:

1. Make sure all “Before you start” requirements are met.
2. Look at the label on the bottom of the cable modem. This label shows the serial number, the MAC (Media Access Control) address of your cable modem, and the MAC address of the USB port. These numbers are unique to your modem. Write them in the spaces below; you may need them for installation and future reference. The CATV network uses the MAC addresses to communicate with your modem.

Serial number _____

Modem MAC address _____

USB MAC address _____

3. Connect the cable TV outlet to the input connector of a two-way CATV splitter using an RG6 coaxial cable.
4. Connect a coaxial cable from one of the output connectors of the splitter to the CATV port on the cable modem rear panel. The other output connector on the splitter may be connected to other devices, such as your television or VCR.
5. Connect your computer to the cable modem using the Ethernet or USB port.

If you use your computer’s Ethernet port:

- a. Connect one end of the Ethernet cable to your computer’s Ethernet port.
- b. Connect the other end of the Ethernet cable to the Ethernet port on the modem (labeled “10/100”).
- c. Connect the 15VDC power adapter to the power port on the cable modem rear panel (labeled “DC”). Plug the adapter into a power outlet.
- d. Your configuration should look like Figure 4.

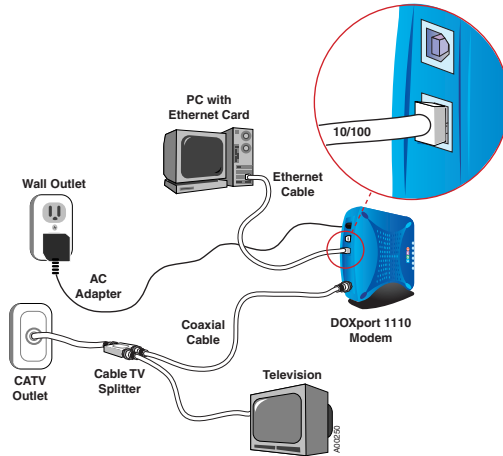





Figure 4. Cabling diagram with Ethernet Configuration

- e. Your modem will now begin the auto-acquisition process. Refer to “LED Acquisition States” on page 13.
- f. Go to step 6 on page 9.

If you use your Windows 98/Me/2000 computer’s USB port (self-install procedure):

The self-install procedure is recommended; the manual install procedure (refer to page 6) is for an advanced user.

- a. Plug the rectangular-end of the USB cable  into your computer’s USB port, and the square-end of the USB cable  into the USB port of the DOXport 1110 (labeled “USB” ).
- b. Your configuration should look like Figure 5.

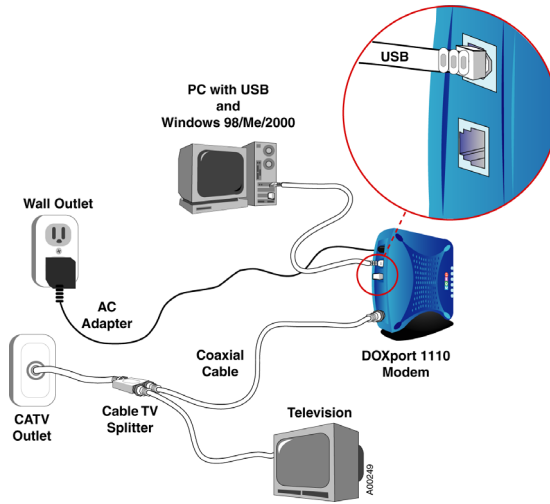


Figure 5. Cabling Diagram with USB Configuration

- c. Once the USB cable is connected between the DOXport 1110 and the PC, the computer will detect the newly added USB device and install the necessary drivers automatically. (The DOXport 1110 USB drivers are stored in the Reference CD, so make sure the CD is in the computer CD-ROM drive. If prompted, enter the drive letter of the CD-ROM).
- d. Follow the on-screen prompts to finish the USB driver installation.

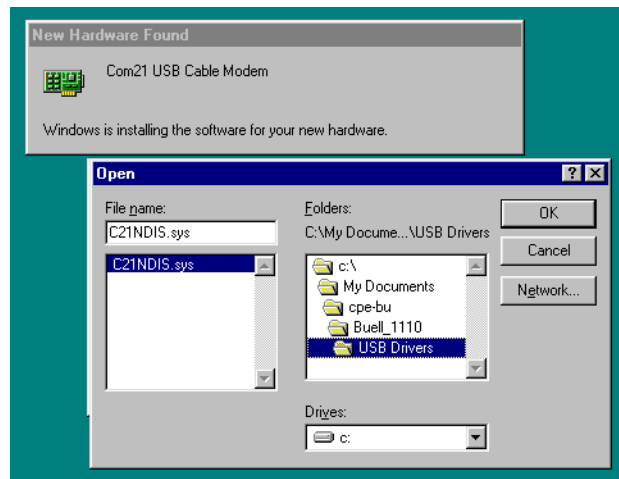


Figure 6. USB Driver Self-Install

- e. Reboot the computer when the installation is finished.
 - Click START -> SHUT DOWN -> RESTART.
- f. Your modem will now begin the auto-acquisition process. Refer to “LED Acquisition States” on page 13.
- g. Go to step 6 on page 9.

Using your Windows 98/Me/2000 computer’s USB port (manual procedure):




- a. Plug the rectangular-end of the USB cable  into your computer’s USB port, and the square-end of the USB cable  into the USB port of the DOXport 1110 (labeled “USB” ).
- b. Once the USB cable is connected, the computer will detect the newly added USB device and prompt for the USB driver installation. Click **OK** to begin the installation.
- c. Follow the on-screen prompt instructions and enter the drive letter of the DOXport 1110 Reference CD-ROM, on which the USB device driver and support driver are located.
- d. After the networking device driver is installed, the networking support driver is also needed. Follow the on-screen prompt to complete the installation.



Figure 7. Add New Hardware Wizard

- e. Click **Next** to the next prompt

- f. Select the recommended option 'Search for the best drivers for your device', then click **Next**.



Figure 8. Search for Best Driver

- g. Select CD-ROM drive, in which the drivers are stored, then click **Next**.



Figure 9. Select CD-ROM Drive

- h. The computer will display the device driver it found. Click **Next**.



Figure 10. Install USB Driver

- i. Click **Finish** to complete the installation.



Figure 11. Finish Installing USB Driver

- j. Reboot the computer when the installation is finished.
— Click START -> SHUT DOWN -> RESTART

- k. Your modem will now begin the auto-acquisition process. Refer to “LED Acquisition States” on page 13 for details.

Now that you have connected the PC and the DOXport 1110, perform the following step:

6. Configure the network parameters of your computer based on the instructions provided by your cable operator. Refer to “Configuring TCP/IP” on page 9 and “Verifying Your IP Address” on page 12 for information on how to configure TCP/IP and check your IP address in Windows.

Configuring TCP/IP

With the modem connected, make sure that you have your computer configured for TCP/IP and check for an IP address. The following instructions are for Windows 98 using Ethernet. If you are using a different operating system, or computer interface, refer to that system’s user’s guide.

Perform the following steps:

1. On the Windows desktop, click **Start**.
2. Select **Settings** and then **Control Panel** from the pop-up menu. Double-click the **Network** icon on the **Control Panel** window. The **Network** window appears, as shown in Figure 12.

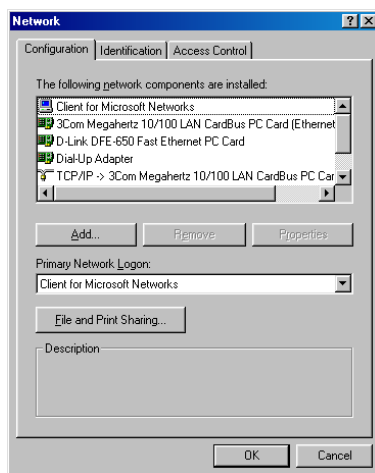


Figure 12. Network Window

3. Select the **Configuration** tab on the **Network** window.
4. Check to see if TCP/IP has been installed for the Ethernet card. If TCP/IP appears in the list of network components, it is installed. Select it and proceed to step 8. If it doesn't appear on the list, click **Add** and continue with step 5.
5. Double-click the **PROTOCOL** option on the **SELECT NETWORK COMPONENT TYPE** window (Figure 13).

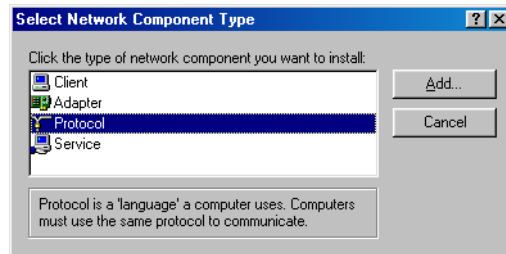


Figure 13. Select Network Component Type Window

6. Click **MICROSOFT** in the **MANUFACTURERS** section and then click **TCP/IP** in the **NETWORK PROTOCOL** section on the **SELECT NETWORK PROTOCOL** window (Figure 14).

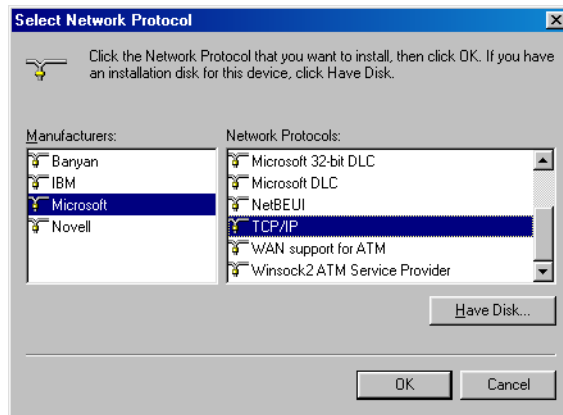


Figure 14. Select Network Protocol Window

7. Click **OK**.

- Click **TCP/IP** on the **NETWORK** window (Figure 15). If you have more than one TCP/IP entry, choose the one associated with the Ethernet card connected to the DOXport 1110.

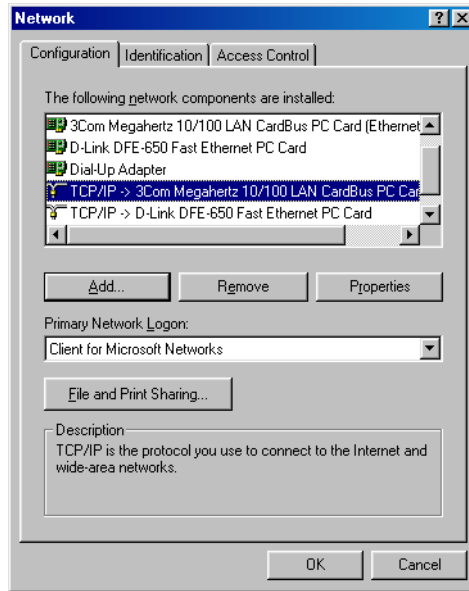


Figure 15. Network Window

- Click **PROPERTIES**.
- Select the **IP ADDRESS** tab on the **TCP/IP PROPERTIES** window (Figure 16).

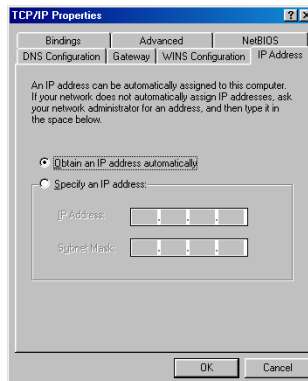


Figure 16. TCP/IP Properties Window

11. Click on **OBTAIN AN IP ADDRESS AUTOMATICALLY**.
12. Click **OK** to accept the TCP/IP settings.
13. Click **OK** to close the **NETWORK** window.
14. Click **OK** when a prompt to restart your computer is displayed, and then click **OK** again.

Verifying Your IP Address

The following instructions are for Windows 98. If you are using a different operating system, refer to the user guide for that system. To check the IP address:

1. On the Windows desktop, click **START**.
2. Select **RUN**.
3. Type **wiipcfg.exe**. A window similar to the example in Figure 17 appears.

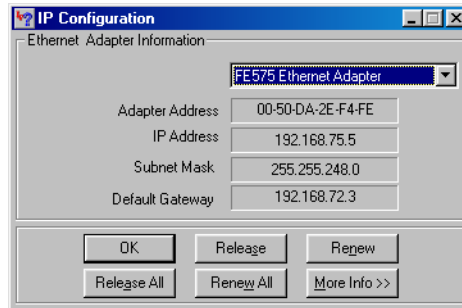


Figure 17. Verifying IP Address

4. Select your adapter name.
5. Click **Renew**.
6. Click **OK** after the system displays the IP address.

If, after performing this procedure, your computer doesn't access the Internet, verify that PWR, LAN, and CBL LEDs are steady green. Then call your Service Provider. They will assist in verifying your configuration.

Diagnostics

LED Identification

The DOXport 1110 modem has six front panel lights called LEDs (Light-Emitting Diodes). The LEDs let you monitor status during installation and operation.



See Table 2 for a description of the six LEDs.

Table 2: DOXport 1110 LEDs

LED	Description
PWR	Indicates whether power is being supplied to the modem. This LED is steady green when the modem is powered.
LAN	Indicates the status of the modem's connection to your computer. This LED is steady green when a functional LAN connection (Ethernet or USB) is detected.
CBL	Indicates the modem's acquisition state. This LED is steady green when the modem is fully acquired.
SND	Indicates that the modem is sending data. This LED flashes green when the modem is sending data upstream.
RCV	Indicates that the modem is receiving data. This LED flashes green when the modem is receiving downstream data.
OPT	This LED's function is defined by your service provider.

LED Acquisition States

When power is applied to the cable modem, the power LED turns solid green, indicating the start of the acquisition process. The process will continue after the cable modem has established a connection to the cable TV network. No additional intervention is required on your part. The modem automatically acquires to and registers with the cable data network.

See Figure 18 for a graphical representation of the LED states during the acquisition process (the LEDs will flash in synchrony).

Sequence	LED State	PWR	LAN	CBL	SND	RCV	OPT
1	Power ON						
2	Bootup						
3	Self Test						
4	Downstream Frequency Hunt						
5	SYNC						
6	UCD Wait						
7	Power Ranging						
8	DHCP						
9	TFTP						
10	Image Update (Optional)						
11	Registration						
12	BPI Key Exchange (Optional)						
13	Operational						

Legend:

Green	OFF	Green/OFF (Fast)	Green/OFF (Fast)	Amber/OFF (Fast)	Amber/OFF (Fast)	As Needed

A0024E

Figure 18. LED states

IMPORTANT

If the modem is set for “Network Access Denied” by your service operator, the modem will remain in the Registration state (sequence 11). Contact your cable service provider.

Troubleshooting with LEDs

Table 3 provides possible solutions in the event that your LEDs indicate that the modem has a problem.

Table 3: LED Troubleshooting


Indication/LED State	Problem	Possible Solution
PWR LED off	No power	Check power adapter connections, and power outlet. If all appear to work, contact your Service Provider.
None of the LEDs light up	Power has not been applied to LEDs	Check power adapter connections, and power outlet. If all appear to work, contact your Service Provider.
CBL LED steady amber	Hardware failure	Disconnect DC plug, wait 10 seconds and reconnect DC plug. If no change, contact your Service Provider.
LAN LED off	No Ethernet or USB	Check Ethernet/USB connection and computer power. If using USB, check the USB driver (see “Checking the USB Driver” on page 16).
LEDs stuck in the Image Update state	Modem image update	Wait until update is complete (usually 2-10 minutes). If the LEDs do not change, contact your Service Provider.
PWR LED is green and CBL is flashing amber	Modem’s boot code has failed to execute	Disconnect DC plug, wait 10 seconds and reconnect DC plug. If no change, contact your Service Provider.
LEDs stuck in the Downstream Frequency Hunt state.	Modem is searching for downstream frequency from the Service Provider	If the modem has been stuck in this state for longer than 30 minutes, make sure the cable is firmly connected at the modem and at the CATV outlet. If no change contact your Service Provider.
LEDs stuck in the Registration state	Modem is attempting to register with the Service Provider	If the modem has been stuck in this state for longer than 10 minutes, contact your Service Provider.
LEDs indicate normal operation but modem does not allow data throughput	Potential network configuration issue	Check network configuration. If modem still does not allow data throughput, contact your Service Provider.

Checking the USB Driver

If you are connecting the cable modem to your Windows 98/Me/2000 computers USB port, check if the USB driver is correctly installed.

- Click START -> SETTINGS -> CONTROL PANEL, then double click the SYSTEM icon.

Select the DEVICE MANAGER tab and click the '+' to expand the Network Adapter devices. All working USB devices will appear on the System 'Device Manager' window (Figure 19).

If the Com21 USB Cable Modem is properly installed, the Device Manager will display it with this symbol  .

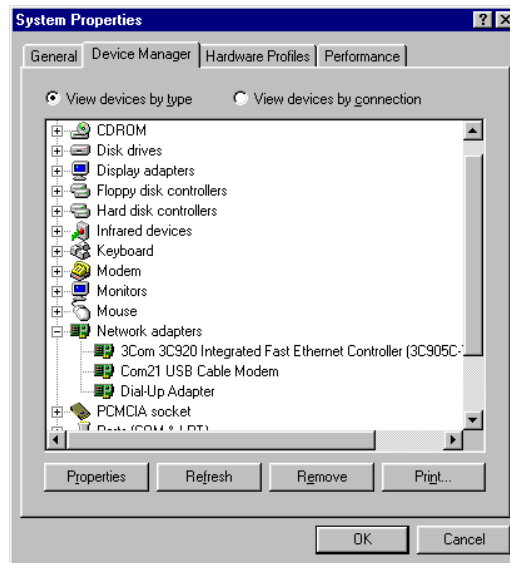


Figure 19. Device Manager

Otherwise, it will display a warning sign on top of the USB symbol (Figure 20). Make sure the USB symbol represents the DOXport 1110 and not another USB device.

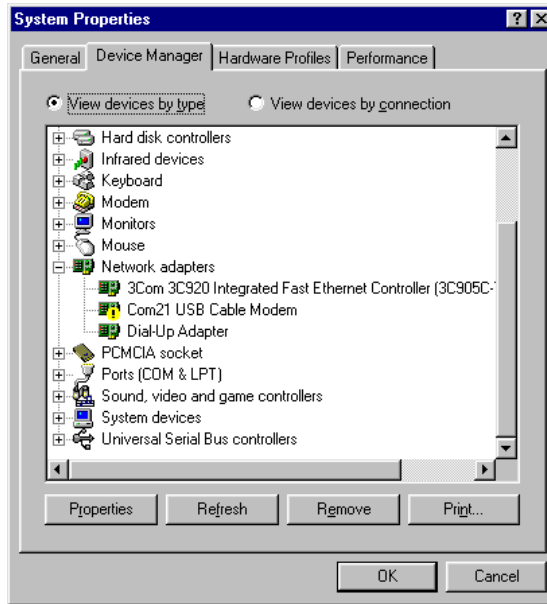


Figure 20. USB Device with Warning Symbol

If the warning sign is displayed, there might have been an error during the installation. Reboot the computer and check the device status again after reboot.

- Click START -> SHUT DOWN -> RESTART
- Click START -> SETTINGS -> CONTROL PANEL, then double click the SYSTEM icon.

If the driver still has the warning after rebooting, remove it and reinstall it again.

- Click REMOVE and select 'Remove from all configurations (Figure 21).
- Click OK and unplug the USB cable from the computer.
- Click REFRESH and make sure the warning USB symbol has been removed.

Reboot the computer and then follow the installation procedure again.

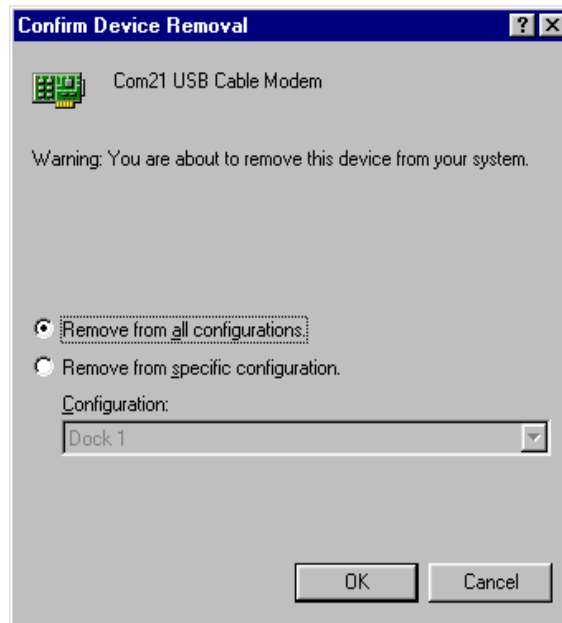


Figure 21. Removing USB Driver

DOXport 1110 Specifications

The Com21 DOXport 1110 cable modem complies with DOCSIS specifications. Table 4 lists detailed operating and environmental specifications.

Table 4: Specifications

Parameter	Specification
DOWNSTREAM	
Demodulation	64QAM/256QAM
Physical speed	30 Mbps (64QAM) / 43 Mbps (256QAM)
Error correction	Reed Solomon + Trellis (Enhances Annex B)
Frequency range	88 MHz to 860 MHz (edge-to-edge)
Bandwidth	6 MHz
Input signal level	-15dBmV to +15dBmV
Input impedance	75 ohms
Return loss	> 6 dB from 88 MHz to 860 MHz
UPSTREAM	
Modulation	QPSK /16QAM
Physical speed	320, 640, 1280, 2560, 5120 Kbps (QPSK) 640, 1280, 2560, 5120, 10240 Kbps (16QAM)
Error correction	Reed Solomon
Frequency range	5 to 42 MHz (edge-to-edge)
Bandwidth	200, 400, 800, 1600, 3200 kHz
Output signal level	+8 dBmV to +58 dBmV (QPSK) +8 dBmV to +55 dBmV (16QAM)
SNMP MANAGEMENT	
MIB Group	MIB II, MCNS MIB
INTERFACES	
Ethernet	10/100 Base-T (full duplex), RJ-45 Connector
Cable	F type female connector, 75 ohm
USB	USB 1.1, B-Type female connector

Table 4: Specifications (continued)

Parameter	Specification
POWER	
Power input	15 VDC @1A
Power consumption	7 W (Max)
MECHANICAL	
Size	1 in. (H) x 6.625 in.(W) x 5.75 in. (D)
Weight	13.9 oz
ENVIRONMENTAL	
Operating temperature	0°C to +40°C
Humidity	10 % to 90 % (non-condensing)
Storage temperature	-40°C to +75°C
Safety	UL/cUL, TUV, CE
Emission	FCC part 15, class B

Warranty

Subject to the provisions described below, Com21 warrants to the original purchaser that the DOXport 1110 ("Product") will materially conform to the specifications applicable to such product and will be free from defects in materials and workmanship under normal and proper use for a period of five (5) years from the date of purchase. This warranty shall not apply to any damage or defect arising as a result of neglect, improper installation, alteration, accident, or improper use of the Product. This limited warranty gives you specific legal rights and you may have other rights which vary from state to state.

No other express warranties are made or authorized with respect to the Product. The warranties with respect to the Product, including without limitation, warranties of merchant ability, fitness for a particular purpose and non infringement, are limited in duration to the warranty period.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Com21's sole liability under this warranty is, at the option of Com21, during the warranty period, and upon proof of purchase, to repair or replace Products that do not conform with the foregoing warranty.

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Unless the law of your state otherwise requires, any claim under this Limited Warranty must be submitted to your place of purchase before the end of the warranty period. At time of purchase, you should record the place and date that you purchased the Product. Warranty service and related procedures can be obtained from the place of purchase where you purchased the Product. To obtain warranty service, you must also provide proof of original date of purchase.

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