



VCOM Module

User Manual

Part Numbers

1200312L5	4 Channels
1200312L1	8 Channels
1200312L2	16 Channels
1200312L3	24 Channels



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VOICE COMPRESSION MODULE OVERVIEW

The Voice Compression Module (VCOM Module) combines with other ATLAS 550 components to implement a voice over frame relay (VoFR) capability in the ATLAS 550 series of Integrated Access Systems. You can order the VCOM Module with support for 4, 8, 16, 24, or 30 simultaneously compressed calls.

FUNCTIONAL DESCRIPTION

The VCOM Module installs onto any option module that can be installed in the ATLAS 550 chassis. You can view the module status from the ATLAS 550 front panel LEDs (also see Chapter 4 of the *ATLAS 550 User Manual*). You can also use the terminal menus to provide additional status information, configure the module, and download application software. Access the terminal menus via either a VT-100 terminal connected to the ATLAS 550 Base Unit's control port or a Telnet session established through the Base Unit's Ethernet port.

VOICE COMPRESSION RESOURCES

- The VCOM Module ordering options provide 4, 8, 16, 24, or 30 voice compression resources.
- The VCOM Module provides automatic selection of CCITT Standard or ADTRAN-proprietary voice compression algorithms based on endpoint configuration.
- The VCOM Module supports FAX at 14400 bps.
- The VCOM Module includes dual-tone, multi-frequency (DTMF) generation and detection.
- The VCOM Module enables and disables individual voice compression resources.

PHYSICAL DESCRIPTION

The VCOM Module provides no external interfaces. Other ATLAS 550 components provide both the network and customer interfaces. An internal bus exchanges information between the ATLAS 550 chassis and the VCOM Module.

RELATED DOCUMENTATION

The following document contains additional information about the ATLAS 550 frame relay feature:

- *ATLAS 550 User Manual* (P / N 61200305L1-1)

UNPACK AND INSPECT

Carefully inspect the VCOM Module for shipping damages. If you suspect damage, file a claim immediately with the carrier and then contact ADTRAN Technical Support. If possible, keep the original shipping container for returning the VCOM Module for repair or for verification of shipping damage.

CONTENTS OF ADTRAN SHIPMENT

The ADTRAN shipment includes the following items:

- VCOM Module
- *VCOM Module User Manual*
(Insert into main *ATLAS 550 User Manual*.)

INSTALLING THE VCOM MODULE

The VCOM resource module must be attached to an ATLAS 550 *option* module before the VCOM resource module may be installed into the ATLAS 550 unit.



*The VCOM resource module cannot be installed into an ATLAS 550 chassis without being first attached to an ATLAS 550 **option** module.*

The VCOM resource module can be attached to any type of ATLAS 550 *option* module and the resulting assembly can then be installed into any *option* module slot of the ATLAS 550 chassis. Only an ATLAS 550 *option* module can be used to carry the VCOM resource module. In particular, the VCOM resource module cannot be attached to any *network* module or inserted into any *network* module slot of the ATLAS 550 chassis.

To install the VCOM resource module onto an ATLAS 550 *option* module and then into the ATLAS 550 unit, use the following procedure.

Instructions for Installing the VCOM Module	
Step	Action
1	On the rear of the ATLAS 550 chassis, remove the cover plate covering the slot into which the option module carrying the VCOM resource module is to be inserted. If the ATLAS 550 option module is already in the ATLAS 550 chassis, simply loosen the thumbscrews at both edges of the option module faceplate and slide the module out of the chassis.
2	Carefully align the P10 connector on the VCOM resource module with the J10 connector on the option module. Using only fingertip pressure, so that neither circuit board bends or flexes, ensure that the connectors are firmly seated. Secure the opposite end of the VCOM resource module to the option module using the screws and standoff posts supplied.
3	Slide the option module, with the VCOM resource module attached, into the ATLAS 550 chassis until the module is positioned firmly against the front of the ATLAS unit.
4	Fasten the thumbscrews at both edges of the option module faceplate. Tighten with a screwdriver.
5	Install any additional modules into the base unit, as specified in the <i>Installation</i> chapter of the <i>ATLAS 550 User Manual</i> .

Figure 2-1 shows the proper placement of the VCOM Module in the ATLAS 550 chassis.

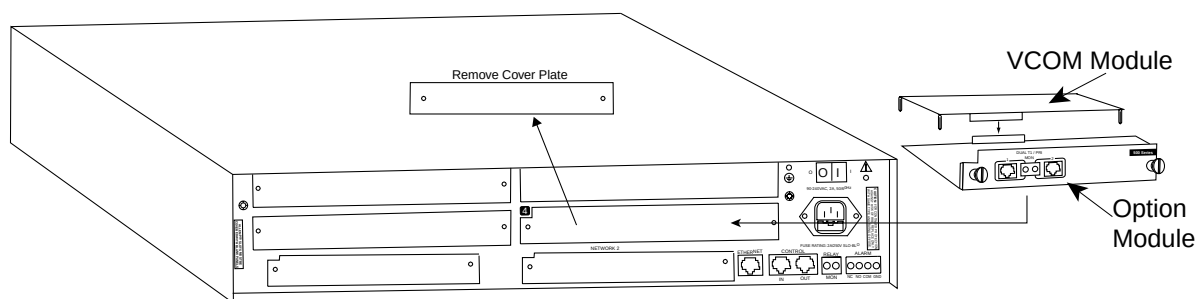


Figure 2-1. VCOM Rear Chassis

WARNING

Option modules are intended to be serviced by qualified service personnel only.

POWER-UP AND INITIALIZATION

After installing the VCOM Module into the ATLAS 550 chassis, the front panel **STATUS** indicator blinks red, yellow, and green for a time. The **STATUS** indicator remains solid green when the VCOM Module is ready to use. At this time, you can invoke a system self-test; refer to the ATLAS 550 *User Manual* for details.

**NOTE**

This self-test sequence may take up to eleven (11) minutes.

FAILED SELF-TEST

The terminal menu self-test log records any self-test failures for the VCOM resource module. Resources that fail self-test are disabled after power-up initialization is complete. Performing a hardware-level reset via the terminal menu may recover these failed resources.

Self-test for the VCOM resource module consists of two basic steps: verification of the module's interface with the ATLAS 550 controller chassis and then verification of the module's voice compression resource data paths.

During tests of the interface between the module and the controller, both components exercise their circuits for the DUAL-PORT RAM, or DPRAM. Once this interface is verified, testing proceeds to the voice compression data paths.

The controller generates a special data stream, known as QRSS, that is individually sent to each voice compression resource. The voice resource must return the data error-free; the error-detection circuits are then checked by intentionally inserting an error that must be detected. This testing may take up to almost 30 seconds per voice resource and once started, must be allowed to run to completion.

OVERVIEW

You can configure, control, diagnose, and view the status of the VCOM Module with the terminal menus. This chapter describes the menu items available for operating the VCOM Module using the terminal menu.

Security Passwords

You must have the appropriate password level to use the terminal menu to edit items. (See the section *Access Passwords* in the *ATLAS 550 User Manual* for detailed information on working with passwords.) Each menu description in this chapter indicates the password levels required for read and write access.

Security level 1 users can view and edit every available field.

Security level 5 users can view any field but they cannot edit.

TERMINAL MENU STRUCTURE

ATLAS uses a hierarchical menu to access all of its features. The top-most menu level leads to submenus that are grouped by functionality (see the menu tree in Figure 3-1 on page 3-2). All submenu items display in the VT-100 terminal window.

The **MODULES** terminal menu configures and controls the VCOM Module. The **MODULES** submenu, **TYPE**, shows the VCOM Module as **VCOM** (see Figure 3-2 on page 3-2). (This will change, depending on the number of channels supported. It could be **VCOM-4**, **VCOM-8**, **VCOM-16**, or **VCOM-24**.) The following sections describe the **MODULES** menu and its **VCOM** submenus.

**NOTE**

*For simplicity, future references to the **VCOM** in this manual will not carry the channel designation.*

Modules	Slt	Type	Menu	Alarm	Test	State	Status	Rev	Info	Part Number
									Serial Number	
									Assembly Revision	
									Firmware Revision	
									Device	
									State	
									Algorithm	
									Silence	
									Connection	
									Frame Type	
	Config								Device	
									State	
	Test								Device	
									Usage Time	
									ATLAS Frms	
									ATLAS Drop	
									VCOM Frms	
									VCOM Drop	
	FAX capability								Clear	
									Reloads	
									Enable/Disable FAX capability	
									Current FAX status	

Figure 3-1. VCOM Module Menu Tree

ATLAS 550/Modules(Rsc3)										
System Info	Slt	Type	Menu	Alarm	Test	State	Status	Rev		
System Status	Slt0	Sys Ctrl	[+] OK	OFF	OFF	ONLINE	Online	B		
System Config	Ntw1	T1/PRI-1	[+] [OK]		[OFF]	ONLINE	Online	A		
System Utility	Ntw2	EMPTY				ONLINE	Empty	-		
Modules	Slt1	EMPTY				ONLINE	Empty	-		
Packet Manager	Rsc1	EMPTY				ONLINE	Empty	-		
Router	Slt2	EMPTY				ONLINE	Empty	-		
Dedicated Maps	Rsc2	EMPTY				ONLINE	Empty	-		
Dial Plan	Slt3	T1/PRI-2	[+] [OK]		[OFF]	ONLINE	Online	B		
	Rsc3	VCOM-4	[+] [OK]		[OFF]	ONLINE	Online	C		
	Slt4	EMPTY				ONLINE	Empty	-		
	Rsc4	EMPTY				ONLINE	Empty	-		
SYS:ONLN NETWK1:ONLN NETWK2: -- 1: -- 2: -- 3:ONLN 4: --										
Module menus *Z=help 15:20										

Figure 3-2. Modules Menu with VCOM Installed

MENU ACCESS

The ATLAS 550 system controller automatically detects the presence of the VCOM Module as it is installed into the system. To access the **VCOM MODULE** menus and submenus, use the keyboard arrow keys to scroll to the appropriate row and column; then, press **Enter** on the keyboard.



NOTE

Refer to the ATLAS 550 User Manual for detailed instructions on navigating through the terminal menus.

MODULES

The following paragraphs describe the **MODULES** menus of the ATLAS 550.

SLT

Read Security: 5

Displays the number of available slots in the ATLAS 550 chassis. **SLOT 0** refers to the ATLAS 550 Base Unit.

TYPE

Write Security: 3; Read Security: 5

Displays the module type currently installed in the slot or the module type you plan to install in the slot. If a VCO MModule is installed, the **TYPE** field automatically defaults to **VCOM** (the VCOM Module). Alternatively, you can use this field to preconfigure the system before installing a module by specifying the module type that will be installed into each slot.



NOTE

*If a module is installed, **TYPE** automatically displays the name of the installed module. To change this name, set **TYPE** to **EMPTY** and then select another module.*

MENU

Read Security: 5

Displays additional status and configuration menus and submenus for various modules. To access the VCOM Module (**VCOM**), use the arrow keys to scroll over to the **MENU** column and down to **VCOM**; then press **Enter**. (A discussion of the submenu items for this option begins with *VCOM Menus* on page 3-5.)

ALARM

Read Security: 5

Indicates any alarm conditions on the VCOM Module. Press **Enter** in this field to open the **ALARM** menu.

TEST

Read Security: 5

Indicates when the VCOM Module is executing a test. Press **Enter** in this field to open the **TEST** menu.

STATE

Read Security: 5

Denotes the module as **ONLINE** or **OFFLINE**. Even though a module is physically installed, it must be marked **ONLINE** for it to be considered an available resource.

Marking an installed module **OFFLINE** may be useful during system troubleshooting. If you choose **OFFLINE**, the module will not be in an alarm condition, but will display **OFFLINE**.



*Only if **STATE** reads **ONLINE** can the ATLAS use an installed module for any data movement.*

STATUS

Read Security: 5

Displays status information on the VCOM Module.

ONLINE	The module is enabled and is responding to the system controller's status polls. This is the normal response of the system.
NO RESPONSE	The module is enabled but it is not responding to the system controller's status polls. This response indicates a problem in the system. It also shows if the module is not installed.
EMPTY	The system controller has neither detected any module in the option slot, nor has a module been manually enabled for this slot.
OFFLINE	The module is installed but has been manually changed to OFFLINE by a user. The module is still responding to the system controller status polls.
OFFLINE / NO RESPONSE	The module is installed but has been manually changed to OFFLINE by a user. The module is not responding to the system controller's status polls. This response indicates a problem in the system. It also shows when the module is not installed.
NOT READY	The module is installed and performing startup initialization. The initialization of the VCOM Module should take less than two minutes.

REV

Read Security: 5

Displays the assembly revision level of the selected module.

VCOM MENUS

Figure 3-3 shows the **MENUS** for the VCOM Module. The following sections describe these options.

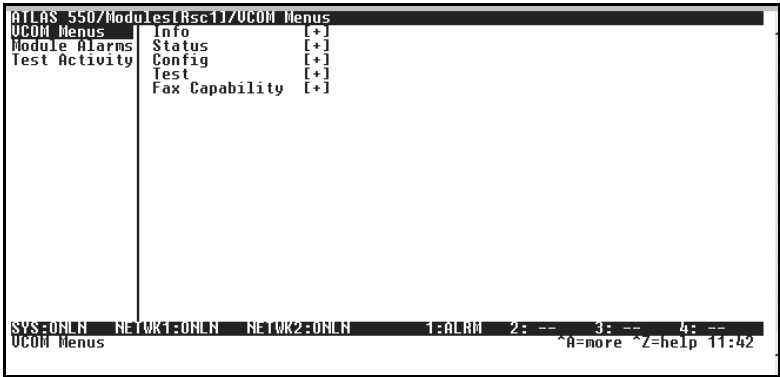


Figure 3-3. VCOM Menus

INFO	Read Security: 5 Displays module and software information for the VCOM module.
PART NUMBER	Read Security: 5 Displays the ADTRAN part number for the module (read-only).
SERIAL NUMBER	Read Security: 5 Displays the VCOM Module's serial number.
ASSEMBLY REVISION	Read Security: 5 Displays the assembly revision level for the VCOM Module (read-only).
FIRMWARE REVISION	Read Security: 5 Displays the firmware revision level for the VCOM Module (read-only).
STATUS	Displays submenus for available resources of the VCOM Module.
DEVICE	Read Security: 5 Indicates the resource number of the VoFR device listed. On the VCOM Module, VoFR devices are numbered 1-32.
STATE	Read Security: 5 Indicates the condition of the individual VoFR device.
N/A	Not available. This device is not populated on the VCOM Module.

AVAILABLE	This resource is available for use as a voice compression resource.
BUSY	This resource is currently being used as a voice compression resource.
TESTING	This resource is currently being tested and is not available for use.
FAILED	This resource has failed testing and is not available for use.

ALGORITHM Read Security: 5
Denotes the voice compression algorithm being used by the VoFR device. Any VoFR device can use any available compression algorithm. When ATLAS 550 chooses a VoFR device for a particular call, the voice compression algorithm is set to match the dial plan endpoint configuration. Refer to the Frame Relay section of the *ATLAS 550 User Manual* for more information.

N/A Not available. This device has not been assigned a voice compression algorithm.

G.723.1 CCITT G.723.1 compression; 6.3 kbps bandwidth.

NETCODER ADTRAN-proprietary NETCODER compression; 6.4 kbps bandwidth.



Some voice compression standards are proprietary and may be used only under specific licensing arrangements. The ATLAS 550 provides complete management of these licensed resources; therefore, users are not required to take additional steps to ensure conformance with licensing provisions. For example, the ATLAS 550 manages its resources so users never exceed the maximum licensed number of simultaneous connections. Refer to the Frame Relay section of the ATLAS 550 User Manual for details.

SILENCE Read Security: 5
Reduces total system bandwidth load.

Voice endpoints continue to originate frame relay traffic during periods of relative silence. The VCOM Module expects to receive such silence frames; therefore, silence compression is **DISABLED** by default. Some voice endpoints can be configured so that no silence frames are transmitted during periods of relative silence. For compatibility with these devices, the VCOM Module can be configured to expect that silence suppression is **ENABLED**; thus, no frame relay traffic is generated during periods of silence. Both voice endpoints must agree on the silence suppression setting. Refer to the *ATLAS 550 User Manual* for more information.

CONNECTION Read Security: 5
Helps identify a suspect VoFR device if a particular call reports poor quality. The displayed packet identifier and the dial plan endpoint identify the call using this VoFR device.

FRAME TYPE	Read Security: 5 Displays the kind of frame the ATLAS 550 receives from the frame relay endpoint connected to the VCOM channel, allowing users to monitor the kind of data being carried on the network and processed by the ATLAS 550. (The ATLAS 550 interprets the most-recently received frame from the endpoint.) During a voice connection, the frame type displays as VOICE. For a FAX connection, a variety of frame types display. Initially, VOICE displays indicating that although the call has completed, the answering FAX machine has not yet announced its 2100 HZ tone. After completing the 2100 Hz, both FAX endpoints repeat a V.21 and V.xx cycle for each page of the FAX document. Each packet the VCOM Module receives from its connected frame relay endpoint is classified into one of the following groups:
BLANK	No frame has yet been received from the endpoint, or a FAX connection is between protocol states.
DTMF	Dual-tone, multi frequency (DTMF) digit received.
VOICE	Receiving voice frames. A connection to a FAX endpoint shows a VOICE status until the FAX protocol is established.
2100HZ TONE	FAX single-frequency tone detected indicating the beginning of a FAX session.
V.21	FAX single-frequency tone detected indicating the beginning of a FAX page.
V.27TER (2400 BPS)	FAX data reception of 2400 bps using protocol V.27ter.
V.27TER (4800 BPS)	FAX data reception of 4800 bps using protocol V.27ter.
V.29 (7200 BPS)	FAX data reception of 7200 bps using protocol V.29.
V.29 (9600 BPS)	FAX data reception of 9600 bps using protocol V.29.
V.33 (12000 BPS)	FAX data reception of 12000 bps using protocol V.33.
V.33 (14400 BPS)	FAX data reception of 14400 bps using protocol V.33.

CONFIG	Provides diagnostic tools for suspected problems; under normal operation, users do not configure the VoFR devices.
DEVICE	Read Security: 5 Identifies the VoFR device on the VCOM Module. VoFR devices are numbered 1 through 32.
STATE	Write Security: 3; Read Security: 5 Controls the configuration state of the individual VoFR device. The VCOM Module determines the initial configuration state of each device. ATLAS uses this configuration information to determine which VoFR devices are functional and may be used; which are defective and should not be used; or which are not present on the module and should not be used. Users who suspect an individual VoFR device of improper operation can manually disable that device to prevent ATLAS from attempting to use it. The possible states are defined below.
DEFERRED	Devices which fail built-in testing are automatically marked as <i>Deferred</i> , indicating that the ATLAS 550 declines to use the device.
AVAILABLE	The device is properly functioning and can be used when required. The ATLAS 550 automatically marks devices that pass built-in testing as <i>Available</i> .
DISABLED	Marking a device as <i>Disabled</i> prevents the ATLAS 550 from attempting to use it. You can mark a device currently in use as disabled without disturbing the connection, but the device will not be eligible for use in future calls until you re-mark it as <i>Available</i> . You might want to do this if you suspect that a particular device is malfunctioning and do not want any calls routed to it.

TEST

The **TEST** menu requires no user action during normal operation. However, the ATLAS 550 and the VCOM Module make various **TEST** performance measurements available to the user to gain insight into the low-level functioning of the VCOM Module. If a malfunction is suspected on the VCOM module, ADTRAN service personnel can use this menu to locate the problem.

This menu is documented here in the interest of completeness. The values automatically reset each time the VCOM Module is installed into the the ATLAS 550 chassis. These values are also cleared whenever the ATLAS controller is rebooted.

DEVICE

Read Security: 5
Identifies the VoFR device.

USAGE TIME

Read Security: 5

Measures the total elapsed time that a VoFR device has the status **BUSY**. The time is expressed with millisecond precision. Available VoFR devices are assigned new connections using a round-robin technique where all other available VoFR devices must be used before a given device is assigned a new connection. This scheme tends to use all VoFR devices evenly. If a given device shows significantly less elapsed usage time than other VoFR devices on the same VCOM Module, that device may be faulty.

ATLAS FRMS

Read Security: 5

(ATLAS Frames) Counts every frame that the ATLAS 550 sends to or receives from the VoFR device. This count indicates activity but does not indicate the actual amount of frame relay data exchanged. The total number of frames handled by the VoFR device is given by the following equation:

$$Frames_{ATLASTotal} = Frames_{ATLAS} + Frames_{ATLASDropped}$$

See the **ATLAS DROP** definition below for a description of the term:

$$Frames_{ATLASDropped}$$

ATLAS DROP

Read Security: 5

Counter-measures each frame that is dropped or discarded during communication between the the ATLAS 550 and the VoFR device; i.e., ATLAS Frames Dropped. The exchange protocol is designed so that *no* frames should be discarded during this operation. A consistent pattern of dropped frames by a given VoFR device may indicate a faulty VoFR device or an overloaded ATLAS 550 system.

**NOTE**

The discarded frame indicated by this value does not reflect network-level performance management, but indicates an anomalous condition within the ATLAS 550 unit. Persistently dropped frames may indicate a problem with the ATLAS 550 unit or the VCOM Module.

VCOM FRMS

Read Security: 5

Counts every frame successfully sent to or received from the ATLAS 550 system controller. This is an indication of activity but does not indicate the actual amount of frame relay data exchanged. The following equation gives the total number of frames handled for this VoFR device by the VCOM Module:

$$Frames_{VCOMTotal} = Frames_{VCOM} + Frames_{VCOMDropped}$$

See the **VCOM DROP** definition below for a description of the term:

$$Frames_{VCOMDropped}$$

VCOM DROP

Read Security: 5

Counter-measures each frame dropped or discarded by VCOM Module during communication with the ATLAS 550 system controller about a VoFR device. The exchange protocol is designed so that *no* frames should be discarded during this operation. A consistent pattern of dropped frames by a given VoFR device may indicate a faulty VoFR device or an overloaded ATLAS 550 system.



NOTE

The discarded frame indicated by this value does not reflect network-level performance management but indicates an anomalous condition within the ATLAS 550 unit. Persistently dropped frames may indicate a problem with the ATLAS 550 unit or the VCOM module.

CLEAR

Read Security: 5; Write Security: 3

Resets the elapsed usage time and frame counters for thisVoFR device. Ordinarily, users won't reset these performance measurements. However, this feature can be useful when testing that a suspected problem has been resolved and when zeroing the various counters would make observing future events easier.



NOTE

Resetting these performance counters has no effect on the performance values accessible via the SNMP network management interface.

RELOADS

Read Security: 5

Number of times since reboot that this device has been reloaded due to a failure.

FAX CAPABILITY

The FAX Capability menu allows FAX transmissions to be enabled / disabled.

ENABLE/DISABLE FAX CAPABILITY

This menu item toggles FAX capability on and off.

CURRENT FAX STATUS

Displays current state of FAX capability.

ATLAS FEATURES USED WITH VCOM MODULES

In addition to the **VCOM** menu items, the ATLAS 550 system provides additional services that operate in conjunction with the VCOM Module: **FACTORY RESTORE** and **SYSTEM SELF-TEST**.

FACTORY RESTORE

The factory default settings for the VCOM Module can be restored from the terminal menus.

To restore all of the factory default settings for the VCOM Module, press the **F** key while the terminal cursor is positioned over the **SLT** (Slot) number on the **MODULES** menu.

To restore the factory default setting for only a single field, press the **F** key while the terminal cursor is positioned over that particular field.

SYSTEM SELF-TEST

SYSTEM SELF-TEST, a submenu of the ATLAS main menu item **SYSTEM UTILITY**, executes both the VCOM Module internal test and the ATLAS 550 internal test. For additional information on self-test, see the *ATLAS 550 User Manual*.

To execute the test, when **SYSTEM SELF-TEST** displays, place the cursor on it and press **Enter**. The unit continuously changes the display on the self-test log screen until all test results are shown.

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Product Support Information

Pre-sales Inquiries and Applications Support

Please contact your local distributor, ADTRAN Applications Engineering, or ADTRAN Sales:

Applications Engineering (800) 615-1176

Sales (800) 827-0807

Post-Sales Support

Please contact your local distributor first. If your local distributor cannot help, please contact ADTRAN Technical Support and have the unit serial number available.

Technical Support (888) 4ADTRAN

Repair and Return

If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Customer and Product Service (CAPS) department to issue an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact CAPS directly at the following number:

CAPS Department (256) 963-8722

Identify the RMA number clearly on the package (below address), and return to the following address:

ADTRAN Customer and Product Service
6767 Old Madison Pike
Progress Center
Building #6 Suite 690
Huntsville, Alabama 35807

RMA # _____

