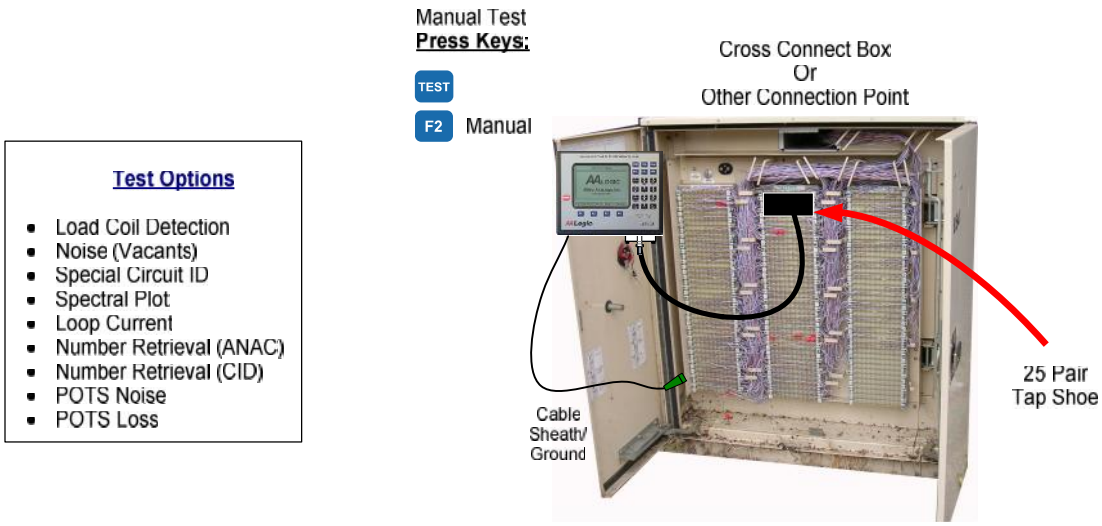
1. Manual Tests

ATV-25 manual testing is used to test a single pair and view the results. This is often part of a diagnostic process. The test pair can be one of the 25 pairs connected through the Cinch connector or a pair connected to the PR0 cord. Each manual test is explained in this section.

Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.

The results of manual tests are not saved in internal memory. An Automatic test must be used for tests that must be saved. Refer to section **Error! Reference source not found.**, Automatic Tests **Error! Reference source not found.** for more details.

The figure below shows a typical connection for manual testing using the Cinch connector.

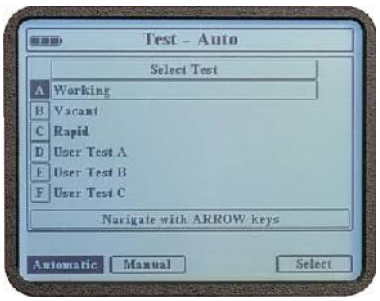
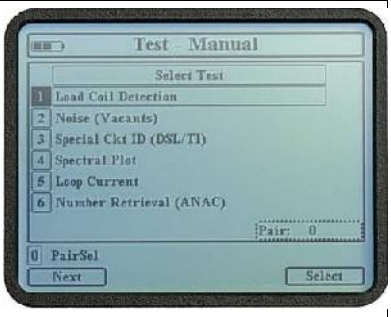
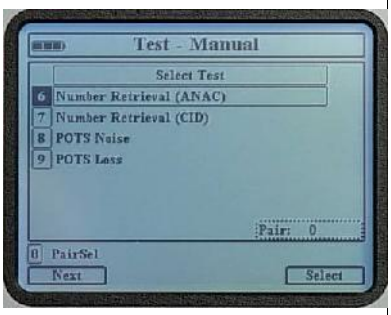


ATV-25
Manual Tests

1.1 Load Coil Detection

Load coil detection scans a vacant pair to determine if one or more loads are present in the line. The test can detect up to five loads ± one load. Loads may not be detected if there is less than 500 feet on either side of the load. The test displays a message if the line is not suitable for load coil detection.

1.1.1 Load Coil Detection Step-by-Step

Press **[Test]**.	
Press **[F2] Manual** This selects the first manual test page. The manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the Load Coil Detection test.	 Manual Test Page 1  Manual Test Page 2
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	

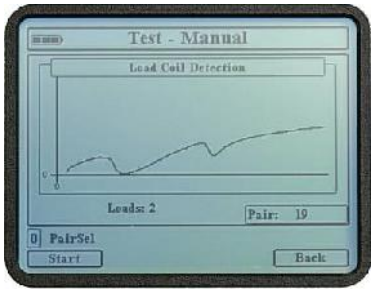
Press **[F1] Start**

A trace is drawn on the screen as the ATV-25 scans the pair for load coils. A load coil will cause a peak (pole) and dip (zero) in the trace image. The ATV-25 counts these pairs of poles and zeros and indicates the number of loads below the graph.

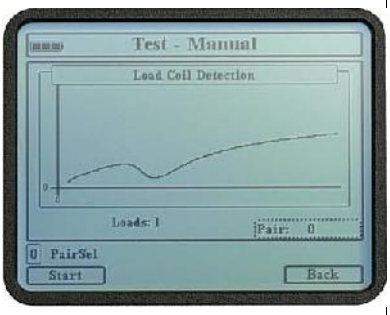
A smooth line is displayed if no loads are detected.

A new test can be run by selecting a new pair in the 25 pair module to test or moving the PR0 cord and pressing **[F1] Start**.

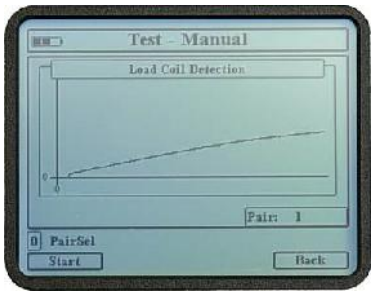
The **[F4] Back** key can be used to return to the Manual test list.



Two loads detected



One load detected



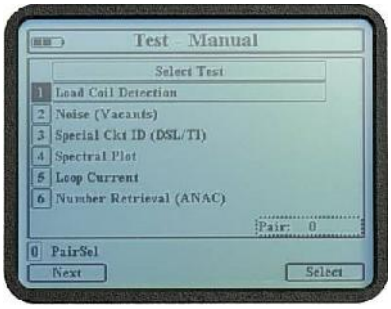
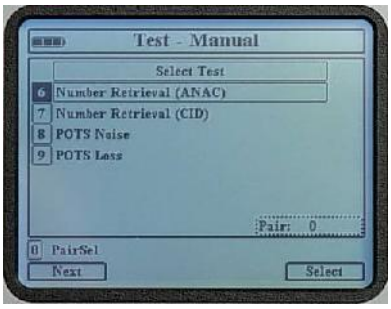
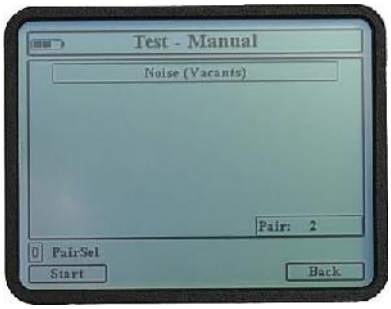
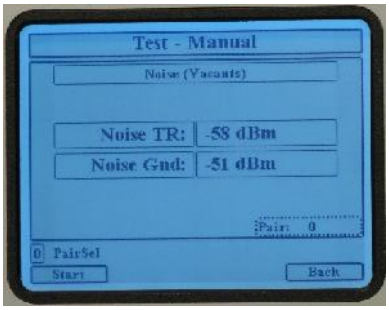
No loads detected

1.2 Noise (Vacants)

The Noise (Vacants) test measures the TR (metallic) and Longitudinal (ground) noise on vacant pairs. TR noise is noise that is heard on a line. Longitudinal noise is noise that is present between the conductors of a pair and the sheath/ground of the cable.

1.2.1 Noise (Vacants) Step-by-Step

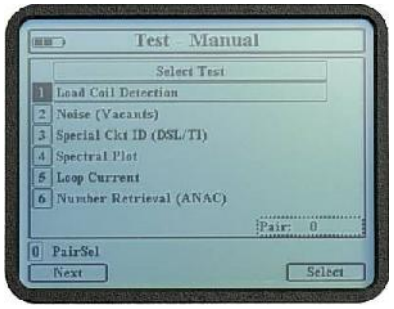
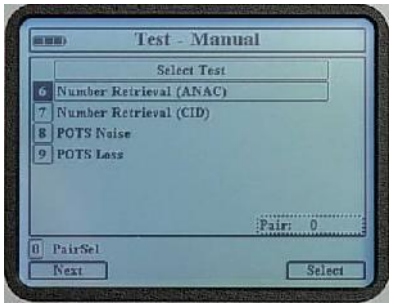
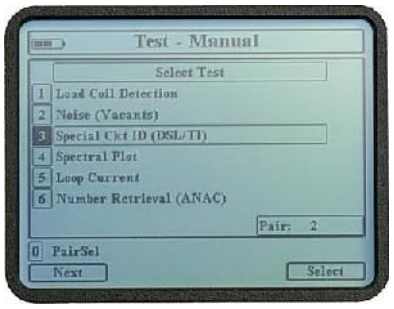
Press **[Test]**

Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Noise (Vacants)** test.	 Manual Test Page 1  Manual Test Page 2
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start**. The Noise TR and Noise Gnd are displayed in dBm. Local standards should be used when considering acceptable levels of noise. Noise on vacant pairs can be significantly higher than in working pairs due to the lack of termination of the pairs. A new test is run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. Use **[F4] Back** key to return to the Manual test list.	

1.3 Special Circuit Identification -- Special Ckt ID (DSL/T1)

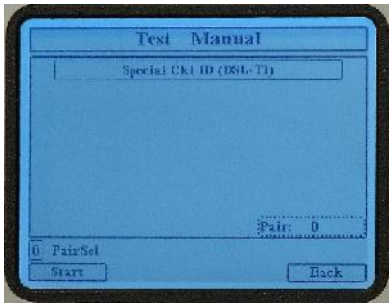
Special circuit identification allows the user to identify T1, HDSL, and xDSL circuits. The ATV-25 samples the energy on the pair at specific frequencies to detect digital services that may be on the line.

1.3.1 Special Ckt ID (DSL/T1) Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Special Ckt ID (DSL/T1)** test.	 Manual Test Page 1  Manual Test Page 2  Special Ckt ID (DSL/T1) highlighted

Press **[F4] Select**

Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.

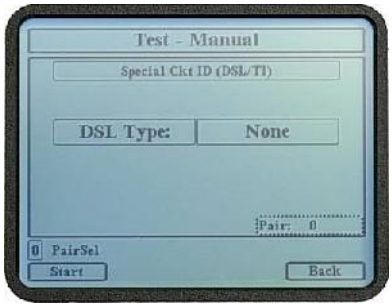


Press **[F1] Start**

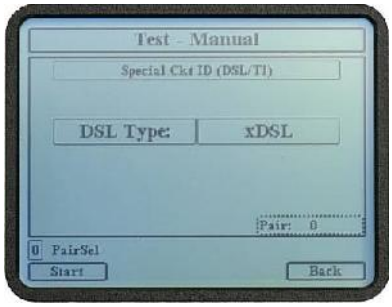
The ATV-25 can display None, xDSL, HDSL, or T-1. xDSL is indicated for all DSL circuits that cannot be classified as T-1 or HDSL.

A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**.

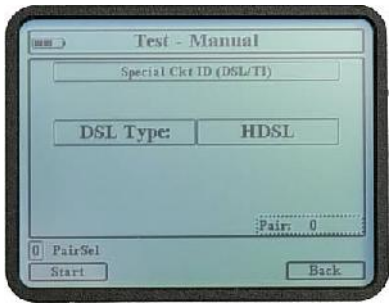
The **[F4] Back** key can be used to return to the Manual test list.



No special circuit found



DSL service found



HDSL service found

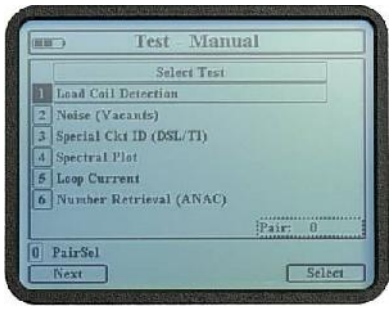
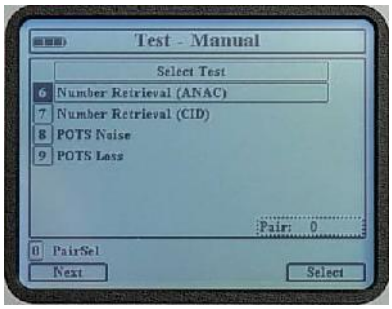
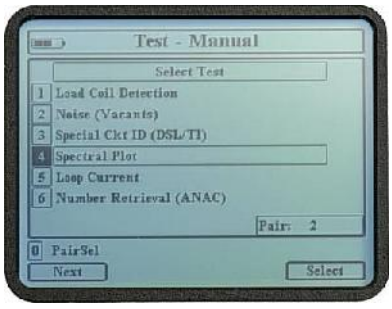
T1 service found

1.4 Spectral Plot

The Spectral Plot is an advanced diagnostic test that plots a graph of line signal amplitudes sampled from a starting frequency and increasing using a defined step increment. The ATV-25 makes 256 measurements or samples. The start frequency and the step increment determine the upper limit of the plot.

The spectral plot is useful when examining broadband data signals such as DSL. The plot can also be used to examine signals in the voice band. The plot shows the magnitude of the signals that occur at the step frequency. These signals may be data signals or interference such as a nearby radio station.

1.4.1 Spectral Plot Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Spectral Plot** test	 Manual Test Page 1  Manual Test Page 2
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	 Spectral Plot highlighted

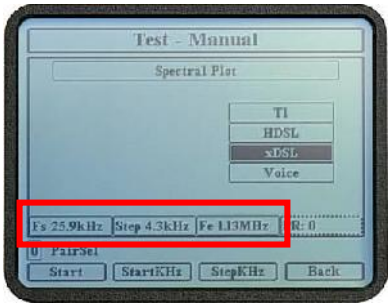
Five options are available for the Spectral Plot. Four pre-defined plots are displayed on the screen with xDSL being the default.

The screen shows the Fs (start frequency), Step (step size), and the Fe (ending frequency). The ending frequency is calculated based on 256 samples starting at Fs and incrementing by Step size.

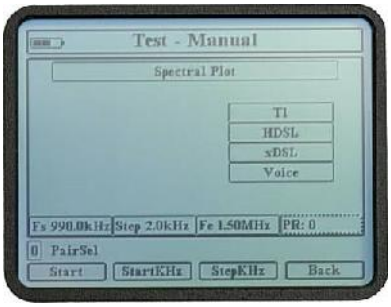
The pre-defined start and step frequencies are updated for each of the available options.

Option	Fs	Step	Fe
T1	30.0kHz	6.0kHz	1.56MHz
HDSL	20.0kHz	3.0kHz	785.0kHz
xDSL	25.9kHz	4.3kHz	1.13MHz
Voice	50Hz	10Hz	2600Hz

Custom plots can also be entered. Press **[F2] Start_kHz** and enter a starting value from 1 to 999. Then press **[F3] Step** and enter a step size from 1 to 9. The Start and Step values are both in kHz. The Fe is calculated and displayed.



xDSL selection showing Fs = 25.9kHz, Step = 4.3kHz, and Fe = 1.13MHz.



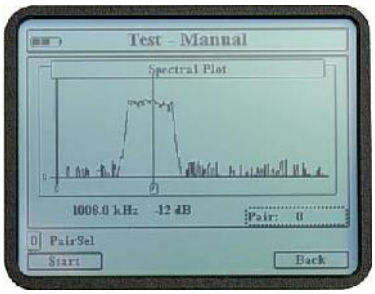
This custom plot configuration shows the Fs set to 990.0kHz and the Step is set to 2.0kHz. The calculated Fe is 1.50Mhz.

Press **[F1] Start**

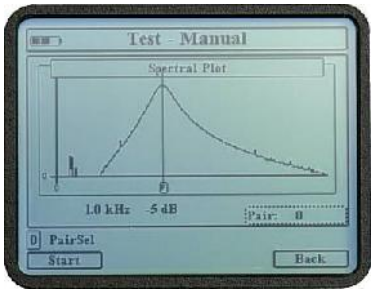
The ATV-25 creates a plot of the signals on the selected line.

A cursor is available when the plot is completed. The ◂ and ▸ keys are used to move the cursor. The cursor frequency and the magnitude of the signal in dB are displayed just below the plot.

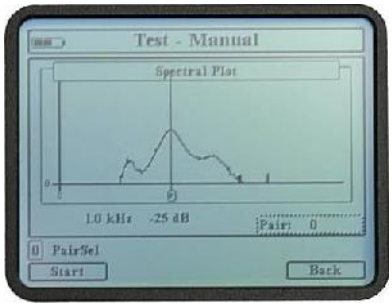
The **[F4] Back** key can be used to return to the Manual test list.



Plot showing an FM signal centered around 1008kHz. Smaller signal spikes are also seen.



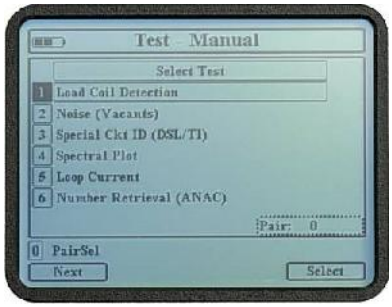
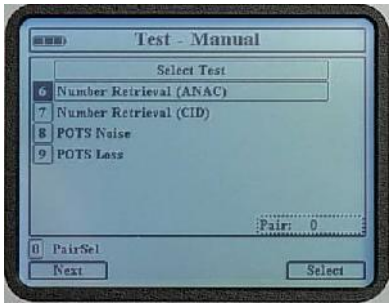
This voice frequency plot shows a wide signal centered atound 1.0kHz.

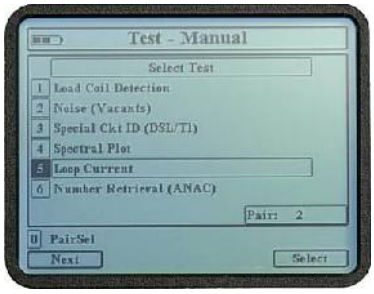
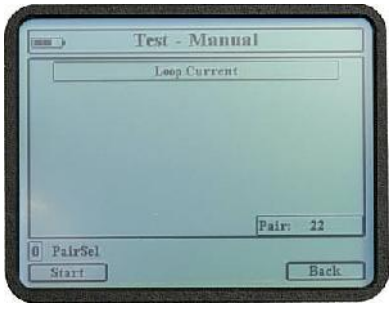
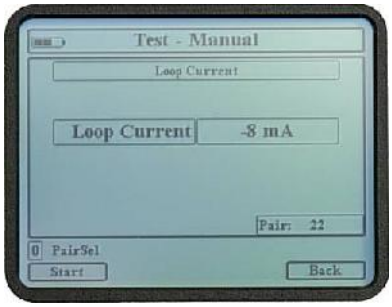
	 Another plot of a signal centered at 1.0kHz.

1.5 Loop Current

Loop current testing is typically performed on lines with POTS service. Minimum loop current is essential to ensure proper operation of CPE (customer premise equipment). The standard minimum loop current for POTS lines is 20mA.

1.5.1 Loop Current Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Loop Current test.	 Manual Test Page 1  Manual Test Page 2

	 Loop Current highlighted
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line is made busy and the loop current is measured and displayed. The line status will be displayed and no current measurement is displayed for lines other than Idle POTS. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The [F4] Back key can be used to return to the Manual test list.	 The measured loop current is 8mA. This current is lower than the standard 20mA requirement.

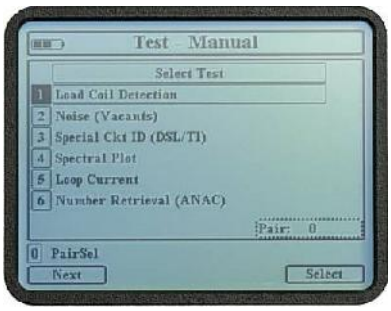
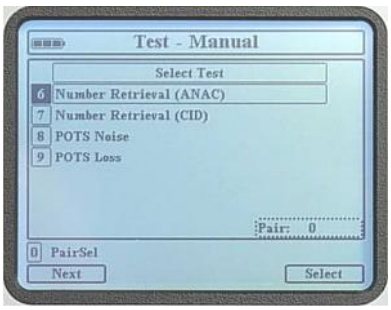
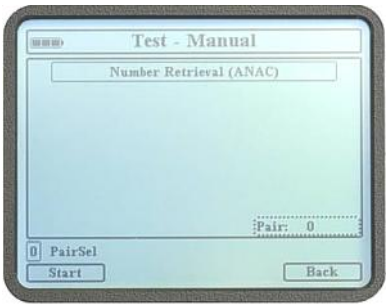
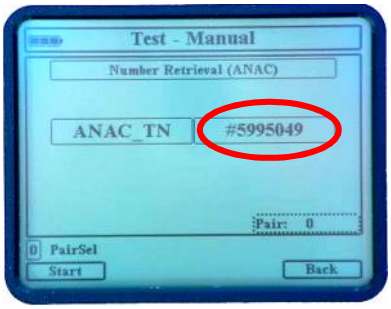
1.6 Number Retrieval (ANAC)

ANAC stands for Automatic Number Announcement Circuit. Many of these ANAC systems announce the caller's assigned telephone number using speech. Some areas are equipped with DTMF ANAC capabilities. These systems first send a DTMF digit. The assigned telephone number is provided using speech if no answer to the DTMF digit is received. The assigned number is sent using DTMF digits if the caller properly responds to initial DTMF digit.

The ATV-25 is compatible with this type of DTMF ANAC. The advantage to this system is that a number is returned for all idle POTS lines and the process is faster than Caller ID identification. The ANAC method should be used for number retrieval when it is available. Consult the appropriate central office to determine if DTMF ANAC is available and the assigned telephone number.

Always ensure the proper CO configuration is selected before attempting ANAC number retrieval. Refer to **Error! Reference source not found.**, Error! Reference source not found. **Error! Reference source not found.** for details on CO configurations.

1.6.1 Number Retrieval (ANAC) Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Number Retrieval (ANAC).	 Manual Test Page 1  Manual Test Page 2, Number Retrieval (ANAC) highlighted
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line status will be displayed and the ANR is not attempted for lines other than Idle POTS. The ATV-25 dials the ANAC number in the currently selected CO configuration. The ANAC response is displayed as the ANAC_TN (ANAC Telephone Number).	

A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	

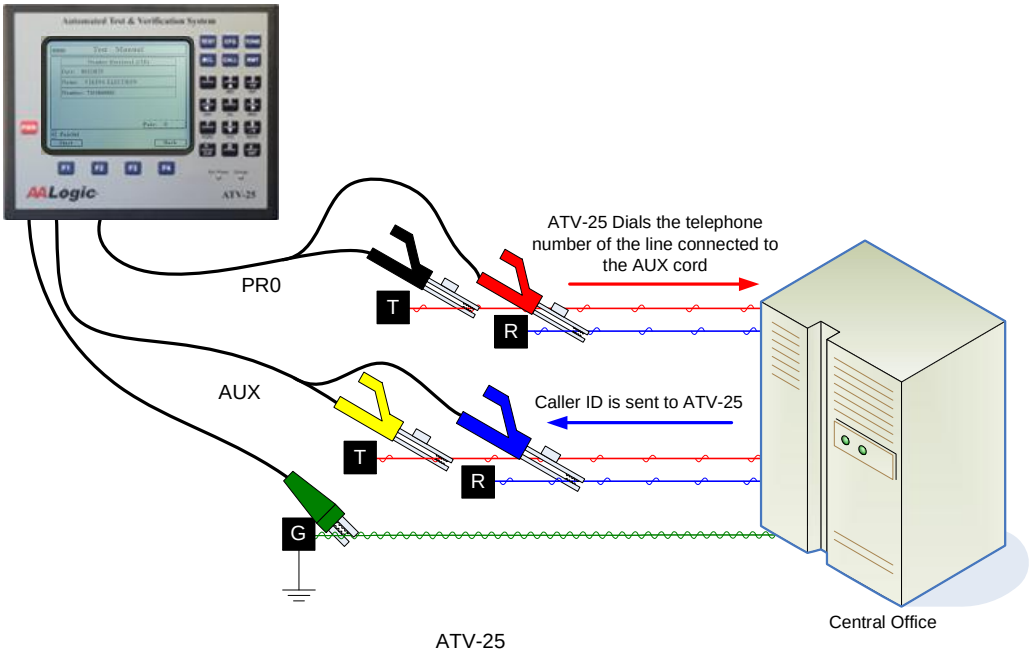
1.7 Number Retrieval (CID)

The CID (Caller ID) automatic number retrieval process allows the ATV-25 to obtain telephone numbers from working POTS lines. This process takes advantage of the caller information sent to a called line between the first and second rings. The test results depend on the data available in the CID information.

The setup for CID requires the connection of the AUX cord to a POTS line. The assigned telephone number of this line must be saved in a CO Configuration as the Caller ID number. Refer to **Error! Reference source not found.** for details on CO configurations.

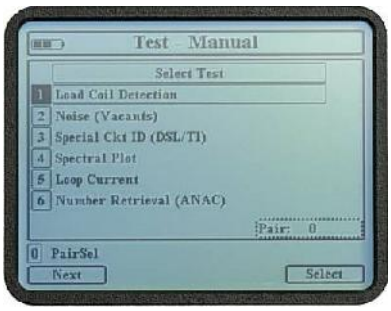
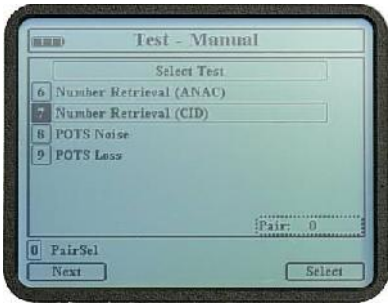
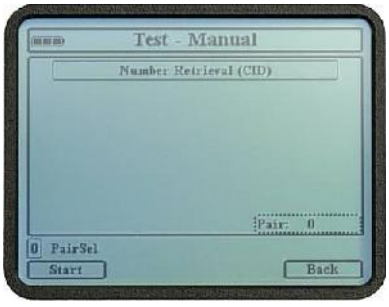
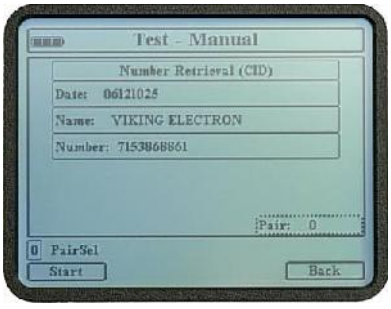
The POTS CID line used for number retrieval should not be a customer line. The line will ring repeatedly for every line tested. The ideal option is to have a number assigned to a vacant pair for testing. The same line is used until all the testing is complete. The number of this line must be stored in one of the four CO slots. Always ensure the proper CO configuration is selected before attempting CID number retrieval. Refer to **Error! Reference source not found.**, Error! Reference source not found. **Error! Reference source not found.** for details on CO configurations.

The figure below illustrates the Number Retrieval (CID) process. The ATV-25 dials the CID number on the POTS pair being tested. The ATV-25 monitors the AUX cord and retrieves the CID information. The collected data is displayed on the screen.



ATV-25
Automatic Number Retrieval
Caller ID Process

1.7.1 Number Retrieval (CID) Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Number Retrieval (CID) test.	 Manual Test Page 1  Manual Test Page 2, Number Retrieval (CID) highlighted
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line status will be displayed and the ANR is not attempted for lines other than Idle POTS. The ATV-25 dials the CID number in the currently selected CO configuration and displays the CID information received,	

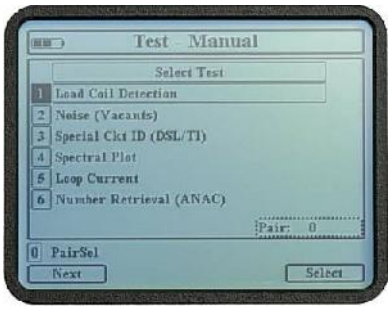
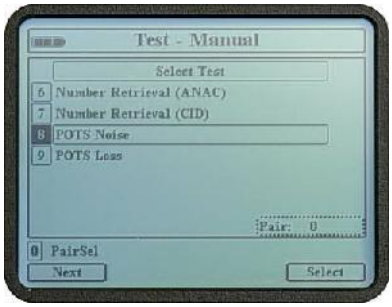
A new test is run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	

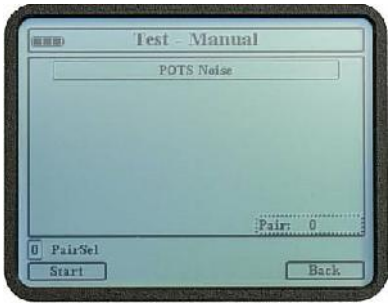
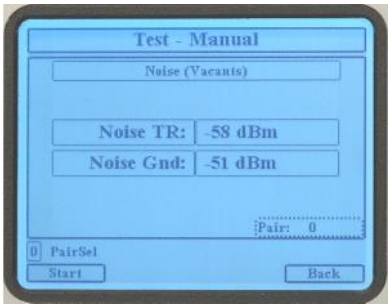
1.8 POTS Noise

POTS noise test allows the ATV-25 to dial a number for a quiet termination and measure metallic and longitudinal noise on a pair. The telephone number for POTS noise must be stored in the currently selected CO configuration. Refer to **Error! Reference source not found.** for details on CO configurations.

> ⓘ The ATV-25 is compatible with lines that combine quiet termination and mW reference tone. The ATV-25 dials the number and monitors the line until silence is detected or the allowed time expires.

1.8.1 POTS Noise Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use [2] ▲ and [8] ▼ keys to highlight the desired test. Highlight the POTS Noise.	 Manual Test Page 1  Manual Test Page 2, Loop Current highlighted

Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The ATV-25 dials the POTS noise number and completes the noise measurements. The line status will be displayed and no measurement is displayed for lines other than Idle POTS or if a quiet termination is not detected. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	

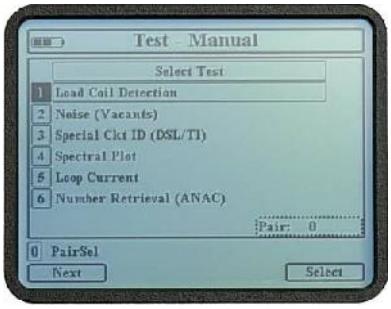
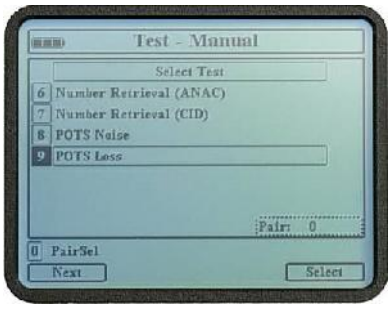
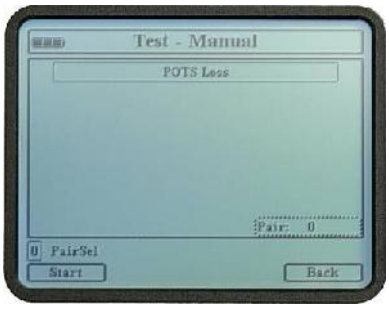
1.9 POTS Loss

POTS Loss test allows the ATV-25 to dial a number for a 1004Hz, mW reference tone and measures the loss. The telephone number for POTS Loss must be stored in the currently selected CO configuration. Refer to **Error! Reference source not found.** for details on CO configurations.

> ⓘ The ATV-25 is compatible with lines that combine quiet termination and mW reference tone. The ATV-25 dials the number and monitors the line until 1004Hz tone is detected or the allowed time expires.

1.9.1 POTS Loss Step-by-Step

Press **[Test]**	

Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use [2] ▲ and [8] ▼ keys to highlight the desired test. Highlight the POTS Loss.	 Manual Test Page 1  Manual Test Page 2, Loop Current highlighted
Press **[F4] Select** Select the pair to be tested. Refer **Error! Reference source not found. Error! Reference source not found.** for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The ATV-25 dials the POTS Loss number and completes the loss measurements. The line status will be displayed and no measurement is displayed for lines other than Idle POTS. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.