

SAGE INSTRUMENTS

925VST VoP Service Tester



USER'S MANUAL

Version 1.2

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Overview

The Sage 925VST

The Sage 925VST is the field component of the Sage Voice over Packet Test System (VTS). The 925VST initiates VoP service qualification and maintenance tests from a customer premise or any 2-wire or 4-wire access point to a Sage responder that is typically located in the central office. The Sage responder performs the cooperative farend responder test functions and sends the measurement data back to the 925VST for review, processing (pass/fail), and storage. The 925VST is designed to be portable and durable and can function just like a telephone handset.

The 925VST initiates tests and displays results immediately upon completion. Once a test is selected on the 925VST, it runs automatically. Test criteria templates installed on the 925VST determine whether a test passes or fails.

The 925VST comes equipped with the Sage Next Generation VoP Test suite. Including SMOS, Packet Voice Impairment Test (PVIT), Echo Sounder, DVM, DTMF, and Callback tests. In addition, the 925VST supports legacy 100 and 102 test line measurements. Additional options include

- 2-wire analog interface
- 4-wire analog interface
- responder mode
- fax text

VoP Test System (VTS)

The 925VST and farend responder are designed to qualify VoP service installations and support on-site field maintenance. Tests are useful to confirm proper IAD (Integrated Access Device) installation, softswitch DN translation, end-to-end voice quality, and detect and isolate echo, packet impairments, and poor network performance.

VoP Test System has two components:

- The Sage 925VST hand-held unit used in the field
- A Sage farend responder that can be located at any telephony 2-wire, 4-wire, or T1/E1 termination point.

VTS Features

The Sage VoP Test System can:

- Test End-to-End Voice Quality (QoS)
 - Mean Opinion Score (MOS)
 - Comfort Noise Level
 - Audio Level

- Troubleshoot and Isolate Echo Impairments
 - Detect up to 4 echoes
 - Echo Level
 - Echo Delay

- Troubleshoot and Isolate Packet Impairments
 - Voice Frame Slips & Duration
 - Voice Frame Loss & Duration
 - Voice Clips & Duration
 - Latency (delay)
 - Noise Hits

- Verify Fax & Standard Legacy Test Lines
 - Fax Grp3 Verification
 - Telcordia 100 and 102 Test Line Directors

General Features

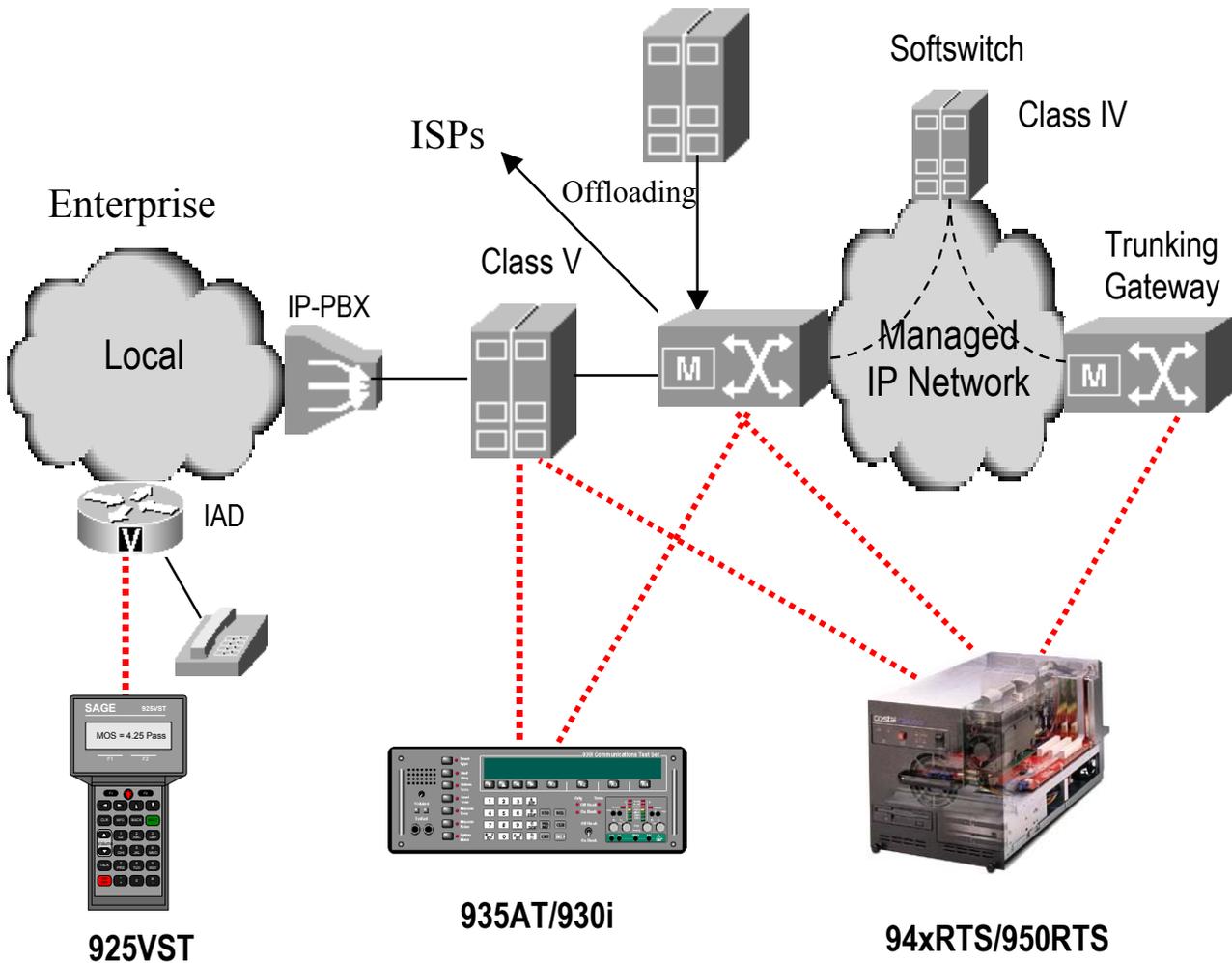
- Codec Type Detection
- DTMF Digit Verification
- Built-in Butt Set
- Call Completion Time
- Automatic Callback
- Dial tone Delay, Loop Current
- Ring Voltage and Frequency Verification
- On-Hook Voltage and Loop Current
- Includes RS232 Interface for Data Export and
- Software Upgrades

Other Tests

The 925VST may come equipped with other tests that do not require a Sage farend responder or that enable the 925VST to emulate a farend responder. They provide detailed results that can be viewed only on the 925VST. These tests may include:

- 100 Responder Noise Measurement
The 100 responder noise measurement operates with a type 100 quiet termination test line.
- 102 Responder Loss Measurement
The 102 responder loss test operates with the type 100 milliwatt test line.
- Fax Emulator Test
The Fax emulator test operates with a standard facsimile machine
- SMOS Test Line
- Packet Voice Impairment Test (PVIT) Send Test Line
- Echo Generator Test Line

The 925VST Test Environment



Use the Sage 925VST hand-held unit in the field to connect to the voice line being tested. The interface can be at a customer premises or at any 2-wire or 4-wire access point. The 925VST can connect to customers served by:

- copper loop
- hybrid fiber coax loop
- wireless loop
- IP
- digital PBX

Using menus on the 925VST, the technician selects the test and then initiates a call to the Sage far-end responder (either the Sage 94xRTS, 950RTS, 935AT, 930i, 925VST, or 325EV). The selected test runs automatically. The 925VST retains pass/fail parameters for

each test. At the conclusion of the test, the 925VST displays an immediate result and pass/fail notification if pass/fail template is enabled.

Using menus on the 925VST, the technician can view stored detailed results of each portion of the test. During the test, the technician can listen to the dial tone, progress tones, and other audible sounds. Typically, a test takes less than 30 seconds to complete.

Getting Started

Unpacking

The following items should arrive with your 925VST:

- 925VST hand-held unit
- 925VST CD-ROM
- AC adapter/power cord
- Test interface connector cable (RJ-48 plug on one end; RJ-11 and RJ-22 plugs on the other end)
- Banana plug to alligator clip ground cable
- Field Test Quick Guide

Additional items may be included with your shipment:

- RJ-48 to alligator clips cable/adaptor
- RS-232 cable
- Padded case with belt loop

Charging the Batteries

WARNING: Use only the AC/DC transformer supplied with the 925VST to charge the batteries. Other transformers may damage the 925VST and void the warranty.

Initial Charge

The 925VST comes with rechargeable batteries installed at the factory. Before using the 925VST for the first time, charge the batteries for two hours.

Do not turn on the 925VST while the batteries charge for the first time.

```
Calibrating
Please wait . . .

Battery: ●●●●●●●●
```

1. Make sure the 925VST is off (i.e., the display is blank and dark).
2. Plug the AC adapter power cord into the appropriate AC outlet.
3. Plug the cord from the AC adapter into the power port on the bottom of the 925VST. Leave the power cord plugged in for at least two hours to allow the batteries to fully charge.

Recharging

Each time the 925VST is turned on, the system checks the batteries. To fully recharge the battery:

1. Turn off the 925VST.
2. Plug the AC adapter into the appropriate AC outlet.
3. Plug the cord from the AC adapter into the power connector on the 925VST.
4. Allow the 925VST to charge for two hours.

NOTE: You can use the 925VST while it is connected to the AC adapter unless it is being charged for the very first time.

To ensure that the battery is fully charged:

1. Turn off the 925VST.
2. Disconnect the AC adapter from the 925VST.
3. Turn on the 925VST and note the indicator bars during the booting process. Indicator bars reach across the full display when the batteries are fully charged.

Understanding the Interface

The 925VST screen displays alphabetic and numeric (alpha-numeric) information on four rows, 20 characters wide. Navigate the screens and menu selections using the keypad.

At any time, press the INFO key to display help text or directions.

```
Sage Instruments
925VST 2.2000
Self Test Passed
Hit Next to Continue
```

Display Characters

ARROWS

An \uparrow or \downarrow arrow in the upper right corner of the display indicates that additional selections or data are available on other screens. The number next to the arrow indicates which screen is currently displayed. Use the \blacktriangle or \blacktriangledown key as indicated in the display to see more selections.

```
Test Select          1  $\downarrow$ 
1:<SMOS Director>
2:DTMF Callback
3:Echo Sounder
```

brackets indicate
"last" selected item

press \blacktriangledown for more
selections

BLINKING CURSOR

The blinking cursor indicates an active field waiting for data entry from the keypad.

< BRACKETED SELECTION >

Brackets indicate the active selection or field. An option enclosed in angle brackets is the default or last option that was chosen. Bracketed options appear in numbered lists and as F1 and F2 function key selections.

In numbered lists with multiple screens, the bracketed option might not appear on the currently displayed screen. Use the ▲ or ▼ keys to locate the bracketed option.

To select the bracketed option, press the NEXT key. The NEXT key advances to the next screen based on the bracketed option, even when the bracketed option is not on the current screen.

Keypad

F1 AND F2

Use the F1 and F2 function keys for various data entry tasks. For example, F1 and F2 toggle between numeric and alphabetic data entry. In some cases, screen text describes the functions of the F1 and F2 keys. Brackets (<>) indicate the active selection.



LIGHT BULB KEY

Use the light bulb key to control the display light. While the unit is on, press the key to toggle the light on or off. The light automatically turns off after a few seconds. You can define the number of seconds the light remains on using the Backlight Timeout option on the Setup menu. (See Backlight Timeout on page 16.)



◀▶ BACKSPACE AND FORWARD

Press the ◀ key to delete the character to the left of the cursor.

Press the ▶ key to enter a blank space (screen displays as a dash) and move the cursor to the right. A blank space in a telephone number represents a 1-second pause in the dialing sequence.

▲ ▼ UP, DOWN, AND ESCAPE

Use the ▲ and ▼ keys to scroll through a list that span several screens or to move to the previous or next screen. You can use the ▲ and ▼ keys whenever an up or down arrow (↑ or ↓) appears in the upper right corner of the screen display.

On the first screen of a list, only the ↓ arrow appears in the display. In the last screen of a list, only the ↑ arrow appears in the display. However, you can press the ▲ and ▼ keys on any screen. If you are on the last screen and you press the ▼ key, the display moves to the first screen. If you are on the first screen and you press the ▲ key, the display moves to the last screen.

You can also use the ▲ and ▼ keys to escape from a data entry field without saving your changes. If you enter data and then press the ▲ and ▼ keys, the field reverts to the last saved entry.

CLR (CLEAR)

Use the CLR key to erase the current data in a data entry field. Press and hold the CLR key to display the Main Menu. Use the CLR key to delete results when reviewing results. (Note: The 925VST will ask for confirmation before deletion.)

INFO

Press the INFO key to display help for the current screen.

BACK

Press the BACK key to move back one screen or level. Repeatedly pressing the BACK key eventually displays the Main Menu.

NEXT

Press the NEXT key to move to the next screen or operation. From a data entry screen, press the NEXT key to accept the current selection or field contents and move to the next data entry screen or function. You can also use the NEXT key to abort a test in progress. See *Aborting a Test* on page 32.

VOLUME CONTROL

During tests, you can hear the sounds produced (e.g., dial tone, call progress tones, etc.). Use the volume control keys to adjust the volume of these sounds. To adjust a sound, press and hold the key *while the sound is audible*. Release the key when you reach the desired level.

TALK

Use the TALK key when you use the 925VST as a telephone or butt-set. (A speaker and microphone are located on the back side of the unit.)

When you press the TALK key, the 925VST goes off hook and the keyboard functions as a telephone keypad. Press the TALK key again to toggle back to on-hook and disable the telephone speaker and microphone.

ON/OFF

Press the ON/OFF key to turn on the 925VST. To turn off the 925VST, *press and hold* the ON/OFF key until the display darkens. The 925VST will turn itself off after 10 minutes if (1) the AC adapter is not plugged in, (2) no test is in progress, (3) there has been no key press for 10 minutes, and (4) the unit is not in talk mode. The 925VST will power itself on when a call comes in.

TELEPHONE KEYS

The 925VST telephone keypad performs many functions and can be used for both alphabetic and numeric (alpha-numeric) data entry. Use the keypad for:

- making menu selections
- entering telephone numbers
- entering other information (e.g., your identification number, names for responder phone lists, selecting display options)

Alphabetic and Numeric Data Entry

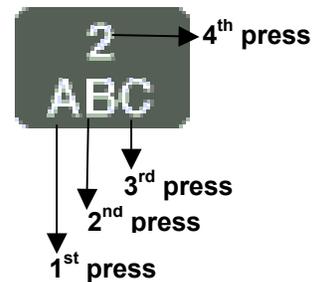
Some data entry fields accept both alphabetic and numeric characters. While the cursor is in a field that accepts both types of characters, use the F1 and F2 function keys to toggle the keypad between alphabetic entry and numeric entry.

There are two ways to enter alpha-numeric characters in a field:

1. Toggle between alphabetic and numeric entry modes by pressing F1 and F2.
- or -
2. Leave the keypad in alphabetic mode, and press the key repeatedly until the desired letter or number is displayed.



telephone keypad



For example, when the keypad is in alphabetic mode, the 2 key provides four characters: A, B, C, and 2. The first time you press the 2 key, an “A” displays at the cursor position. Press the 2 key again (within one second) to display a “B;” press the 2 key a third time to display “C.” Press the 2 key a fourth time to display a “2.” The next press will start the cycle over again by displaying an “A.”

Press the ◀ to backspace. Press the ▶ key enter a dash (-) in a phone number. The dash represents a one-second delay. If you enter a character and the next character is entered by the same key, wait for the cursor to automatically advance to the next character space, or press the ▶ key.

Setting Up the Basic Operating Features

Basic operating features include selecting the type of line used, enabling audible alerts, and brightening or darkening the display screen. You can use the Setup screens (listed below) to change the basic operating features of the 925VST.

- Interfaces (line types and ports)
- Environment (light and sound levels)
- Phone lists (responder phone numbers)
- Responder Mode (type of responder emulated by the 925VST)

```
1:<Interfaces>
2:Environment
3:Phone Lists
4:Responder Mode
```

You can also use the 925Install Tool software to setup the environment and phone lists. This software allows you to set up the environment options and phone lists in an application on your computer, then transmit the information via an RS-232 cable to the 925VST. See 925Install Tool on page 20 for more information.

Interfaces

Use the Interfaces screens to select the type of line to be tested (i.e., the customer's line), designate the responder mode for the 925VST, and set up the 925VST's serial port.

```
Interfaces
1:<Test Interface>
2:Serial Port
```

To access the Interfaces screens, from the Main Menu press the 2 key to display the Setup menu, then press 1.

TEST INTERFACE

Use the Test Interface screen to set the line type interface for the phone line being tested.

- 2-wire loop 600 — specifies a 2-wire interface, loop-start signaling, and a terminating impedance of 600 ohms
- 2-wire loop 900 — specifies a 2-wire interface, loop-start signaling, and a terminating impedance of 900 ohms
- 2-wire ground start 600 — specifies a 2-wire interface, ground-start signaling, and a terminating impedance of 600 ohms
- 2-wire ground start 900 — specifies a 2-wire interface, ground-start signaling, and a terminating impedance of 900 ohms
- 4-wire dry — specifies a 4-wire interface with no on-/off-hook signaling.

```
Select Interface 1↓
1:<2W Loop 600>
2:2W Loop 900
3:2W Gnd-Start 600
```

```
Select Interface 2↓
1:Gnd-Start 900
2:4 Wire Dry
```

SERIAL PORT

Use the Serial Port screen to set the parameters for the 925VST serial port connection. Choose the baud rate (1200, 9600, 38400, or 115200 bps), data bits (8 or 7), and parity (none, even or odd). For best results, use the default settings:

- 38400 bps (this is the baud rate)
- 8 data bits
- No parity

Use the optional 925VST serial port (RS-232) cable (Part #: 9400-0048-01) to connect the 925VST to your computer.

NOTE: In previous versions, users had to manually place the 925VST in Download Mode. This is now done automatically; you do not need to change the mode of the 925VST to download software.

- For more information on setting up the 925VST using the 925Install application on your computer, see 925Install Tool on page 20.
- For more information on upgrading the 925VST application software, see 925Install Tool on page 20.
- For more information on downloading new test templates to the 925VST from the 925VST Template UI application on your computer, see Test Templates on page 24.
- For more information on exporting test results to your computer, see Exporting Results on page 37.
- For more information on controlling the 925VST remotely from your computer, see Remote Control of the 925VST on page 38.

Environment

To access the Environment screens, from the Main Menu press the 2 key to display the Setup menu, then press 2 again.

There are nine Environment screens that allow you to adjust various settings. The screens are listed below in the order in which they appear.

TEMPLATE

A template is a set of threshold criteria that determines whether a test passes or fails. At the Template screen, press 1 to enable or 2 to disable templates. The default is Disabled. Templates can be enabled only if a valid template has been installed. For more information on creating and download templates, see Test Templates on page 24.

TX LEVEL POINT

When interfacing to equipment that is exceptionally sensitive to input signals from the 925VST, you can adjust (increase or decrease) the level of test signals transmitted by the 925VST. For example, setting the TX Level Point to -10 dB reduces the transmitted signal level to 10 dB below the normal transmit level. The allowable range is -50dB to 0dB; the default TX Level Point is 0dB.

TESTLINE TIMEOUT

When operating in a continuous test director mode you must manually stop Echo Sounder and PVIT Send. See Remote Control of the 925VST on page 38 for more information.

For PVIT Measure in both test director mode and responder mode, PVIT Send in responder mode, and Echo Generator (responder mode) you can use this setting to specify how long the 925VST will run a test. When the maximum run-time has expired, the test display switches to the results display. At the Testline Timeout screen, enter the number of seconds before the 925VST automatically ends a test. The maximum run-time for continuous mode director tests is 999 seconds; the default is 300 seconds.

SMOS TESTLINE TPT

If the network under test is exceptionally slow in establishing an end-to-end talk path between the director and responder units, you can adjust the duration of the test progress tone (answer tone; TPT) transmitted by the 925VST when it is in the SMOS Responder mode. TPT is transmitted by the SMOS Responder function in response to a “call” from the far end SMOS Director function. The duration can be from 1 to 99 seconds; the default is 10 seconds.

NO ANSWER TIMEOUT

While the 925VST dials the responder to begin a test, the display reads *Calling Test Line, Please wait...* You can specify how long the 925VST will wait for an outgoing call to be answered. If the responder does not answer the call, the test is aborted and the display reads *Test Aborted*. At the No Answer Timeout screen, enter the number of seconds the 925VST waits for an outgoing call to be answered. The maximum wait allowed is 99 seconds; the default is 40 seconds.

MAX WAIT DIAL-TONE

When the 925VST is connected to the line under test and the desired responder phone number is selected, the 925VST listens for a dial tone before dialing the responder. The 925VST dials the responder number even if no dial tone is detected. At the Max Wait Dial-Tone screen, enter the desired number of seconds the 925VST will wait for a dial tone before dialing the responder. The maximum wait allowed is 99 seconds; the default is 10 seconds.

AUDIBLE ALERT

Audible alerts indicate test activities such as an aborted test or test has failed. At the Audible Alert screen, press 1 to enable or 2 to disable the audible alerts. The default is Disabled.

BACKLIGHT TIMEOUT

The backlight illuminates the display when you press the light bulb key. At the Backlight Timeout screen, enter the number of seconds the display light is on before it automatically shuts off. The maximum illumination time is 99 seconds; the default is 15 seconds.

DISPLAY CONTRAST

At the Display Contrast screen, press F1 (lighter) or F2 (darker) to adjust the display contrast. Repeated presses continue to adjust contrast. The default contrast is dark.

Phone Lists

The phone list contains the phone numbers to farend responders that the 925VST calls to conduct tests. The list works like a speed dial function on a telephone. The 925VST can store up to 9 phone numbers, each with 18 digits.

To access the Phone List screens, from the Main Menu press the 2 key to display the Setup menu, then press 3.

To view the responders that are already in the list, press the ▲ or ▼ keys. The number in the upper right corner of the screen is the register number of that particular phone number.

To add or change a phone number:

1. Use the ▲ or ▼ keys, while viewing the Phone List screen, to locate the number you want to change or to display a new, empty screen.
2. Press F1 to place the cursor in the Number field.
3. Use the keypad to enter the digits.

Press the CLEAR key to delete all data in the current field. Use the ► key to enter a one second pause in the dialing sequence. When you are modifying a phone number, the first press of the ► key moves the cursor to the end of the dialing sequence. The next press of the ► key places a dash (-) in the dialing sequence, which represents a one-second pause.

4. Press the F2 key to move the cursor to the Name field.
5. Use the keypad to enter alphabetic or numeric characters.

For best results, use a name that describes the type of responder. For example, to call the 100 test line, name the responder 100 Responder.

NOTE: You cannot use the F1 and F2 keys to switch between alphabetic and numeric characters. If you want to enter a number, repeatedly press the corresponding key until the number appears on the screen.

6. Press NEXT to store the data.

Edit Phone List 6 ↑↓
#: ■
Name:
<Number> Name

F1

F2

Edit Phone List 1 ↓
#: 17074328878
Name: 100 RESPONDER
<Number> Name

F1

F2

7. If necessary, press F1 (for Yes) to overwrite the prior name and number. Press F2 (for No) to go back to the Edit Phone List screen.
8. When you are finished, press BACK to return to the Setup menu.

For information on entering phone lists using the 925Install application on your computer, see Phone List on page 21.

Responder Mode

Use the Responder Mode screen to specify the type of responder for the 925VST. When selected, the 925VST will load software specific to the selected responder function. To exit responder mode, press the CLR key then reboot the 925VST.

```
Select Responder
1:<SMOS Responder>
2:PVIT Send
3:Echo Generator
```

To access the Responder Mode screens, from the Main Menu press the 2 key to display the Setup menu, then press the 4 key. The default mode is SMOS. For details on set-up and control using commands (e.g., setting responder mode defaults, answering a call, stopping a test) via an RS-232 connection, see Remote Control of the 925VST on page 38.

When a 2-wire interface is selected, all responder modes automatically go off-hook in response to an incoming call. The 925VST then waits 10 seconds for a DTMF command digit to switch it to a specific responder type. If no command digit is detected within 10 seconds, the 925VST answers as the test line type previously selected during Test setup. Testing then starts.

When a 4-wire interface is selected, the responders must be started in one of the following ways.

- 925VST detects DTMF digits 7243.
- User presses the F1 key to start, and the F2 key to stop.
- User sends the command “tstart” via an RS-232 connection. See Remote Control of the 925VST on page 38 for more information.

SMOS RESPONDER

Use DTMF digit 1 to specify SMOS. The 925VST reboots to a state that emulates the SMOS Responder function (as opposed to an SMOS Director function). In this state, the 925VST waits for an appropriate “seizure” stimulus from the far end SMOS Director function. In standard 2-wire loop mode, that stimulus is an incoming “ring” signal from the telephone company central office. This state also supports interactive testing with the SMOS Test Director test.

In SMOS responder mode, the 925VSWT will stop and restart for the next call when a test finishes.

To view the current parameters, press the INFO button.

PVIT SEND

Use DTMF digit 3 to specify PVIT. The 925VST reboots to a state in which it emulates a far end test responder for the test. In this state the 925VST waits for a “seizure” stimulus from the far end. When it detects a seizure, the 925VST immediately starts transmitting the

special PVIT signal to the far end. At the far end, a 935AT or 925VST configured for PVIT Receive analyzes the incoming signal for signs of transmission impairments.

To view the current parameters, press the INFO button. For information on how to stop a test in PVIT mode, see Remote Control of the 925VST on page 38.

ECHO GENERATOR

Use DTMF digit 2 to specify Echo Generator. The 925VST reboots to a state that emulates a programmable loop back responder. In this state, the 925VST waits for a “seizure” stimulus from the far end. When it detects a seizure, the 925VST immediately loops back the incoming received signal back out toward the far end.

To view the current echo path parameters, press the INFO button after the screen displays “Echo Generator Waiting for Ring...” The “loop back” can provide up to two echoes. You can set the echo path loss and echo delay for each echo. The number of echoes and the level and delay parameters for each echo can be modified by in-band DTMF digit commands as described in Setting Level and Delay on page 19.

Note: The parameters shown by using the INFO button do not reflect any changes made during the test from the far end by sending DTMF command digits.

For information on how to stop a test in Echo Generator mode, see Remote Control of the 925VST on page 38.

Setting Level and Delay

When an Echo Generator call is in progress, follow these steps to remotely set the level and delay for Echo-1 or for both Echo-1 and Echo-2.

- The pattern for DTMF digits to set *Echo-1 only* is *-L-L-D-D-D-# where L is a level digit, and D is a delay digit.
- The pattern for DTMF digits to set *both Echo-1 and Echo-2* is *-L-L-D-D-D-L-L-D-D-D-# where L is a level digit, and D is a delay digit.

1. Establish a call with the remote unit.
2. Press the * key, and wait for the prompt tone to cease.
3. Press the number keypad to set level and delay.

NOTE: In most cases, the echo level should be set at a decibel value less than zero. To set the value at zero or greater than zero, precede the number with 9.

4. Press the # key and wait for the prompt tone to cease.

Disabling Echoes

When an Echo Generator call is in progress, follow these steps to remotely disable both Echo-1 and Echo-2.

1. Establish a call with the remote unit.
2. Press the * key, and wait for the prompt tone to cease.

The * digit indicates that remote programming follows. Echo generation is temporarily suspended.

3. Press the # key and wait for the prompt tone to cease.

The # indicates the conclusion of remote programming.

NOTE: To remotely enable both echoes on an EGEN test call in progress, use the steps in the following section.

Minimum On and Off Requirements

- To recognize DTMF digits, Echo Generator specification requires DTMF digits remain on for a minimum of 50 milliseconds.
- Except following the * key, the pause between all DTMF digits (the off time) must be at least 50 milliseconds. The * key initiates remote programming, and is followed by a 480 milliseconds prompt tone. The off time following a * key press must be at least 530 milliseconds (i.e., 480 plus 50).

Incorrect digit sequences produce an alert signal. If you make a mistake during remote programming, simply start over. Each * key press begins a new programming sequence.

925Install Tool

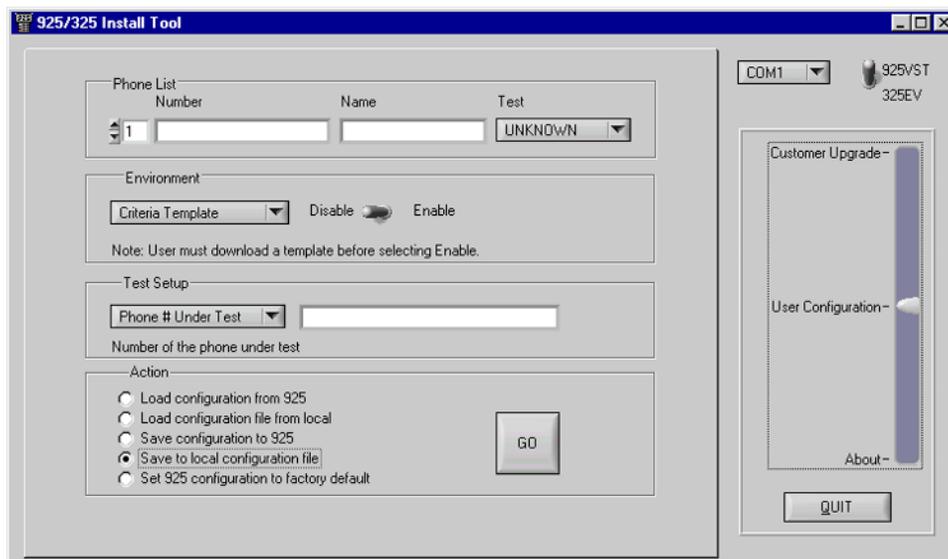
The 925Install Tool software allows you to set up the environment options and phone lists in an application on your computer, then transmit the information via an RS-232 cable to the 925VST. You can also use the 925Install Tool to upgrade the 925VST application software. All of these options are described in the following sections.

To install the software, double-click the 925Install icon and follow the installation wizard.

User Configuration

1. Open (double-click) the 925Install application.
2. Click User Configuration on the right side of the application window.

The following screen appears.



3. Set up the desired parameters.

The main area of the window is divided into four areas — Phone List, Environment, Test Setup, and Action. For more information on the parameters, see the corresponding sections below.

4. Connect the 925VST to your computer via an RS-232 cable.

Read the Serial Port section on page 15 for more information on the correct settings.

5. Select the appropriate port from the pop-up menu in the upper right corner of the application window.

6. Select the desired Action.

For more information on the actions, see the corresponding section below.

7. Click GO in the bottom center of the application window.

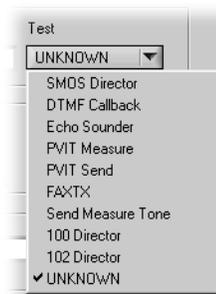
PHONE LIST



In the Phone List area, you can specify up to nine phone numbers. These are the phone numbers of farend responders that the 925VST calls to conduct tests. Each phone number can have up to 18 digits.

For each phone number, you must designate the following items:

- Register number — a number from 1 to 9 that identifies the particular phone number
- Number — the phone number connected to a farend responder to be used for testing
- Name — a name you specify to identify the phone number
- Test — what test this number is used for; select a test from the pop-up menu

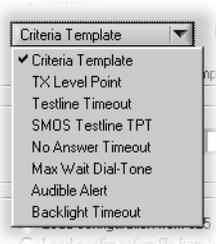


For information on entering phone lists manually on the 925VST, see Phone Lists on page 17.

ENVIRONMENT



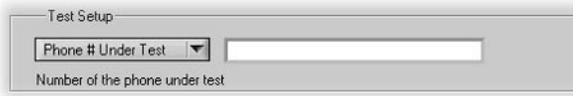
In the Environment area, you can specify various environment parameters. To select a parameter, choose it from the Environment pop-up menu.



Then enter the desired parameter in the text box. For more information on each environment parameter or on setting the parameters manually on the 925VST, see Environment on page 15.

- **Criteria Template** — The default on the 925VST is Disabled. Templates can be enabled only if a valid template has been installed. For more information on creating and download templates, see Test Templates on page 24.
- **Tx Level Point** — The default on the 925VST TX Level Point is 0dB; the allowable range is -50dB to 0dB.
- **Testline Timeout** — The default on the 925VST is 300 seconds ; the maximum run-time for continuous mode director tests is 999 seconds.
- **SMOS Testline TPT** — The default on the 925VST is 10 seconds; the duration can be from 1 to 99 seconds.
- **No Answer Timeout** —The default on the 925VST is 40 seconds; the maximum wait allowed is 99 seconds.
- **Max Wait Dial-Tone** — The default on the 925VST is 10 seconds; the maximum wait allowed is 99 seconds.
- **Audible Alert** — The default on the 925VST is Disabled.
- **Backlight Timeout** — The default on the 925VST is 15 seconds; the maximum illumination time is 99 seconds.

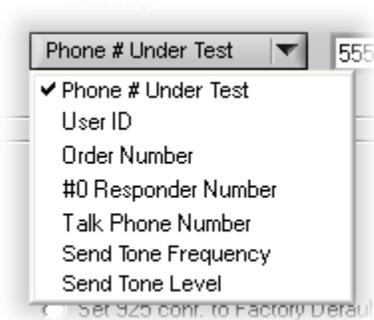
TEST SETUP



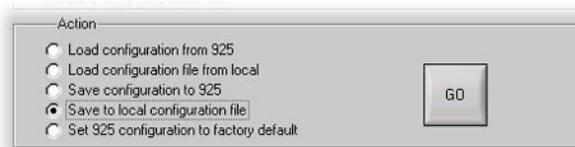
In the Test Setup area, you can specify information associated with a specific set of tests. For each set of tests, you must designate the following items:

- **Phone # Under Test** — the phone number under test
- **User ID** — name to identify the user running the test
- **Order Number** — the work order number

- #0 Responder Number — the farend responder number in register 0; this is a farend responder phone number that is not included in the phone lists
- Talk Phone Number — The phone number used when the 925VST is in TALK mode (For more information on using the 925VST as a telephone, see Using the 925VST as a Telephone on page 42.)
- Send Tone Frequency — the frequency used during the Send Measure Tone test
- Sent Tone Level — the level used during the Send Measure Tone test



ACTION



In the Action area, you can specify what action should be taken with the parameters you have specified. Before you can take any action, you must have the 925VST connected to your computer via an RS-232 cable, and the appropriate com port must be selected in the upper right area of the application window.

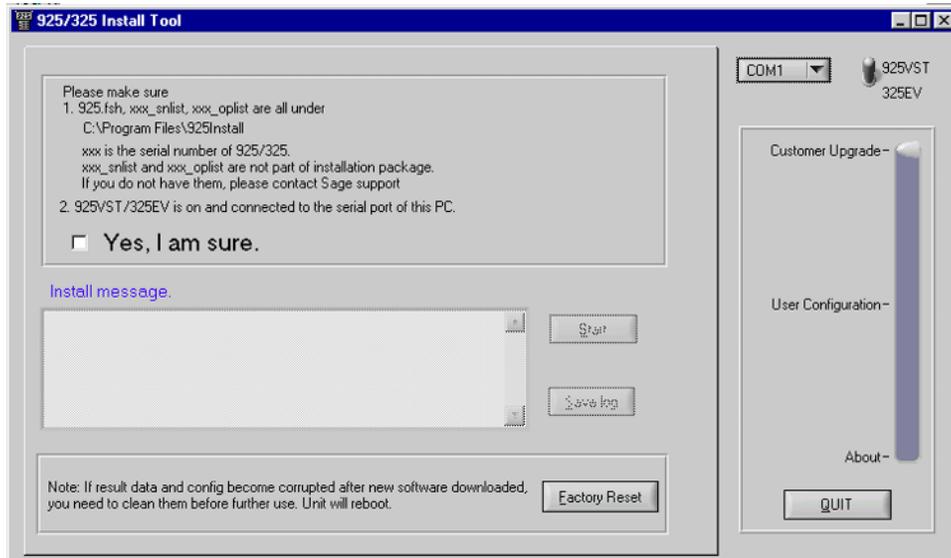
- Load configuration from 925 — This action transfers the current settings from the 925VST to the application; this is useful for viewing the current settings.
- Load configuration file from local — This action loads a configuration from a file that is on your computer.
- Save configuration to 925 — This action loads the current settings to the 925VST. This will overwrite the settings that are on the 925VST.
- Save to local configuration file — This action saves the current settings to a file on your computer. You can then load this file at a later time.
- Set 925 to factory defaults — This action resets the settings on the 925VST to the factory defaults.

Upgrading the 925VST Application Software

Note: Before you can upgrade the software, you must obtain two file from Sage Customer Support.

1. Open (double-click) the 925Install application.

The following window appears.



2. Verify that the conditions listed in items 1 and 2 are met.
3. Check the “Yes, I am sure.” box.
4. Click the Start button.

The status of the update appears in the window.

5. When the update is complete, if you want to save a copy of the installation message, click the Save log button.

Some version of software's result file format is different from the previous version, so that the result will appear be unreadable or read incorrect. Or the configuration file format may be changed. This information will be in the release notes for each version. That is the time that the customer need to do a factory reset to clean it up.

Test Templates

You can use the 925VST Template UI application to create and download test templates. The application is available on the 925VST CD-ROM. A template is a set of threshold criteria that determines whether a test passes or fails. Templates can be enabled only if a valid template has been installed. See Template on page 15.

To install the 925VST Template UI application:

1. Double-click the setup icon on the CD-ROM.

2. If you want to choose an alternate directory, click “Set Directory”.
3. Click “Finish”.

To launch the application, double-click the vstTemplate icon. Each application screen corresponds to a test type.

To create a template:

1. Click the tab for the test you want to run.
2. Click the radio buttons to toggle each subtest on or off as desired.

To change the parameters, you can type in new text or use the arrows to scroll up and down.

To exclude all of the subtests, click “Exclude All”.

3. Enter the acceptable parameters for the desired tests.
4. Click “Create Template”.
5. Enter a unique name for the template, and click “Save”.

The screens for each test are described in the following sections.

To download a template to the 925VST:

1. Connect the RS-232 cable to the 925VST and the computer.
2. Choose the appropriate port number from the Com Port pop-up menu in the lower right corner of the 925VST Template UI application window.
3. Turn on the 925VST.
4. Ensure that the following settings are selected:
 - 38400 bps
 - 8 data bits
 - no parity
5. Click “Download Template” in the lower right side of the 925VST Template UI application window.
6. Click the desired template in the file selection window, then click “Select”.

If the file transfer is successful, a message will show whether the template is enabled or disabled. To enable or disable a template, see Template on page 15.

Call Progress and DVM

Use this screen to set acceptable parameters for the on-hook voltage, loop current, dial tone delay, and connect time.

The screenshot shows the 'Call Progress and DVM' configuration window. It features a menu bar with 'Call Progress and DVM', 'SMDS', 'DTMF Callback', 'Echo Sounder', '100 responder', '102 responder', 'PVIT Measure', and 'HELP'. The main area contains four radio buttons, each with a corresponding parameter and two numeric input fields labeled 'MIN' and 'MAX':

- On Hook Voltage (v) with MIN: -99 and MAX: 99
- Loop Current (mA) with MIN: 20 and MAX: 300
- Dial Tone Delay (mS) with MIN: 0 and MAX: 600
- Connect Time (s) with MIN: 0.00 and MAX: 99.99

Below these settings is an 'EXCLUDE ALL' button. At the bottom, there is a 'Create or Download a Template' section with 'Create Template', 'EXIT', and 'Download Template' buttons, and a 'Com Port' dropdown menu set to '1'.

SMOS

Use this screen to set acceptable parameters for the RT delay, MOS (Mean Opinion Score — voice clarity merit score), BW (useable effective bandwidth), -FS (net total of negative frame slips — a measure of voice signal expansion [gapping]), +FS (net total of positive frame slips — a measure of voice signal compression [jerking]), gain, noise, and codec.

The screenshot shows the 'SMOS' configuration window. It features a menu bar with 'Call Progress and DVM', 'SMOS', 'DTMF Callback', 'Echo Sounder', '100 responder', '102 responder', 'PVIT Measure', and 'HELP'. The main area is divided into two columns: 'Near to Far' and 'Far to Near', each with an 'EXCLUDE ALL' button. Each column contains eight radio buttons, each with a corresponding parameter and two numeric input fields labeled 'MIN' and 'MAX':

- RT Delay (mS) with MIN: 0 and MAX: 200
- MOS [1.0~5.0] with MIN: 1.00 and MAX: 4.60
- BW (%) with MIN: 0 and MAX: 100
- Jitter (mS) with MIN: 0 and MAX: 2000
- +Jitter (mS) with MIN: -2000 and MAX: 0
- Gain (dB) with MIN: -17 and MAX: 0
- Noise (dBmC) with MIN: 0 and MAX: 30
- Codec with MIN: PCM and MAX: PCM

Below these settings is an 'EXCLUDE ALL' button. At the bottom, there is a 'Create or Download a Template' section with 'Create Template', 'EXIT', and 'Download Template' buttons, and a 'Com Port' dropdown menu set to '1'.

DTMF Callback

Use this screen to set acceptable parameters for the ring frequency and ring voltage.

Sage Instruments 925YST Template UI

Call Progress and DVM | SMDS | DTMF Callback | Echo Sounder | 100 responder | 102 responder | PVIT Measure | HELP

Ring Frequency (Hz) MIN: 10 MAX: 30

Ring Voltage (Vrms) MIN: 10 MAX: 99

EXCLUDE ALL

Create or Download a Template

Create Template EXIT Download Template Com Port: 1

Echo Sounder

Use this screen to set acceptable parameters for the level and delay of up to four echoes.

Sage Instruments 925YST Template UI

Call Progress and DVM | SMDS | DTMF Callback | Echo Sounder | 100 responder | 102 responder | PVIT Measure | HELP

Delay 1 (mS) MIN: 0 MAX: 200

Delay 2 (mS) MIN: 0 MAX: 200

Delay 3 (mS) MIN: 0 MAX: 200

Delay 4 (mS) MIN: 0 MAX: 200

Level 1 (dB) MIN: -100 MAX: 1

Level 2 (dB) MIN: -100 MAX: 1

Level 3 (dB) MIN: -100 MAX: 1

Level 4 (dB) MIN: -100 MAX: 1

EXCLUDE ALL

Create or Download a Template

Create Template EXIT Download Template Com Port: 1

100 Responder

Use this screen to set acceptable parameters Cmsg, 3k flat, and ERL.

The screenshot shows the '100 responder' configuration screen. It features a menu bar with options: Call Progress and DVM, SMDS, DTMF Callback, Echo Sounder, 100 responder (selected), 102 responder, PVIT Measure, and HELP. The main area contains three radio buttons for parameter selection: Cmsg (dBmC), 3K Flat (dBm), and ERL (dB). Each has a MIN and MAX value set in adjacent spinners. Below these is an 'EXCLUDE ALL' button. At the bottom, there are 'Create Template', 'EXIT', and 'Download Template' buttons, along with a 'Com Port' dropdown menu set to '1'.

Parameter	MIN	MAX
Cmsg (dBmC)	0	30
3K Flat (dBm)	0	60
ERL (dB)	5	40

102 Responder

Use this screen to set acceptable parameters for the noise C-notch, S/N, and level.

The screenshot shows the '102 responder' configuration screen. It features a menu bar with options: Call Progress and DVM, SMDS, DTMF Callback, Echo Sounder, 100 responder, 102 responder (selected), PVIT Measure, and HELP. The main area contains three radio buttons for parameter selection: Noise C-Notch (dBmC), S/N (dB), and Level (dBm). Each has a MIN and MAX value set in adjacent spinners. Below these is an 'EXCLUDE ALL' button. At the bottom, there are 'Create Template', 'EXIT', and 'Download Template' buttons, along with a 'Com Port' dropdown menu set to '1'.

Parameter	MIN	MAX
Noise C-Notch (dBmC)	10	30
S/N (dB)	10	99
Level (dBm)	-70	39

PVIT Measure

Use this screen to set acceptable parameters for the duration and percentage for packet loss, compressive packet slip, and expansive packet slip; the duration and average for voice clip; and the noise average.

The screenshot shows the 'PVIT Measure' configuration screen within the 'Sage Instruments 925V5T Template UI'. The interface includes a menu bar at the top with options: 'Call Progress and DVM', 'SMDS', 'DTMF Callback', 'Echo Sounder', '100 responder', '102 responder', 'PVIT Measure', and 'HELP'. The main area is divided into several sections, each with a radio button to select it:

- Packet Loss:** Includes 'PL Duration (mS)' (MIN: 10, MAX: 30) and 'PL Percentage (%)' (MIN: 0, MAX: 5).
- Compressive Packet Slip:** Includes 'CP Duration (mS)' (MIN: 0, MAX: 50) and 'CP Percentage (%)' (MIN: 0, MAX: 5).
- Expansive Packet Slip:** Includes 'EP Duration (mS)' (MIN: 0, MAX: 100) and 'EP Percentage (%)' (MIN: 0, MAX: 5).
- Voice Clip:** Includes 'VC Duration (mS)' (MIN: 0, MAX: 50) and 'VC Average (mS)' (MIN: 0, MAX: 50).
- Noise Average (dBmC):** Includes 'Noise Average (dBmC)' (MIN: 0, MAX: 30).

An 'EXCLUDE ALL' button is located below the 'Compressive Packet Slip' section. At the bottom of the screen, there is a 'Create or Download a Template' section with 'Create Template', 'EXIT', and 'Download Template' buttons, and a 'Com Port' dropdown menu set to '1'.

Help

Use this screen to set acceptable parameters for the duration and percentage for packet loss, compressive packet slip, and expansive packet slip; the duration and average for voice clip; and the noise average.

Using the 925VST

This section describes using the Sage 925VST to conduct telephony tests. See Getting Started on page 9 for instructions about initial setup, charging the batteries, and loading responder test phone numbers.

Field Testing Prerequisites

The 925VST is ready to perform tests in the field when:

- The batteries are charged,
- Responder phone numbers are stored or available for manual entry, and
- Appropriate farend responders are available.

Connecting to the Line Under Test

In most cases, you will connect the 925VST to a test access point downstream from the IAD, residential gateway, or IP/Digital Phone.

RJ Connections

Use the supplied cords to connect the 925VST to the line being tested (either the cord with RJ connectors or the cord with alligator clips). Connections are the same whether you are running in responder mode or director mode.

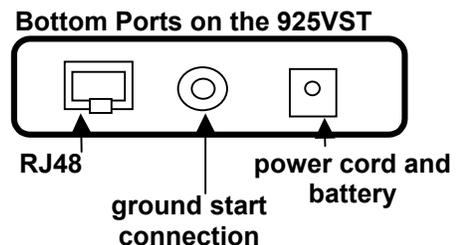
To use the RJ connection cord:

1. Plug the RJ-48 (the larger end) into the bottom of the 925VST.
2. Plug the appropriate RJ-xx end into the customer's connection.
 - For a 2-wire connection, plug the RJ-11 end into the jack for the line to test.
 - For a 4-wire connection, plug the RJ-22 end into the base of a telephone where the handset would typically be plugged in. The telephone base should be connected to the jack for the line to test.

Ground Connection

Connect the 925VST to ground if at least one of the following is true.

- The line being tested uses ground start signaling
- A noise-to-ground measurement is part of the test sequence
- Accurate tip & ring to ground voltage measurements are desired



You can establish the ground connection via the ground cable supplied with the 925VST. The ground cable has a banana plug at one end and a large alligator clip housed in an insulating boot at the other end.

1. Insert the banana plug into the round jack in the center of the bottom of the 925VST.
2. Connect the alligator clip (on the other end of the cable) to the grounding connection on the network interface attached to the line being tested.

Running Tests

To run a test:

1. Turn on the 925VST.
2. Select the desired test.
 - Press NEXT to display the Main Menu.
 - Press 1 to view the Test Select screen.
 - Use the ▲ or ▼ keys to scroll through the Test Select screens until the desired test displays, then use the numeric keypad to select the test number.
3. Enter the phone number of the subscriber line (DN under test, required), then press NEXT.
4. Enter your identification number (optional), then press NEXT.
5. Enter or use the ▲ or ▼ keys to locate the desired Work Order Number from the list (required), then press NEXT.
6. Connect the 925VST to the line being tested.
 - Plug the RJ-48 (the larger end) into the bottom of the 925VST.
 - For a 2-wire connection, plug the RJ-11 end into the jack for the line to test.
 - For a 4-wire connection, plug the RJ-22 end into the base of a telephone where the handset would typically be plugged in. The telephone base should be connected to the jack for the line to test.
7. Use the ▲ or ▼ keys to locate the desired responder (far end) phone number from the list or use register 0 for manual entry.
8. Press NEXT to start the test.
 - In 2-wire mode, testing begins automatically.
 - In 4-wire mode, the responders must be started in one of the following ways.
 - Detection of DTMF digits 7243.
 - Press the F1 key to start, and the F2 key to stop.
 - Send the command "tstart" via an RS-232 connection. See Remote Control of the 925VST on page 38.

NOTE: Press the INFO button anytime to get information about the current display.

NOTE: When running Echo Sounder, press the TALK button to send DTMF digits to the far end echo generator test line or subjectively talk and listen using butt-set mode.

Aborting a Test

While a test is in progress, you can abort it and return to the Main Menu. To abort a test while in progress:

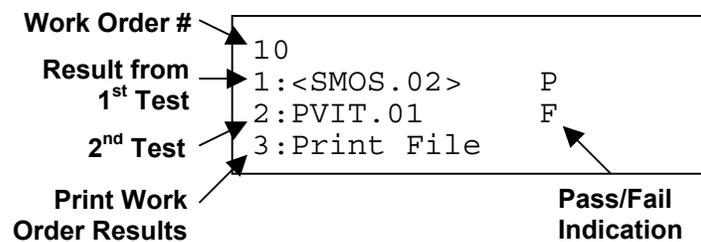
1. Press the NEXT key. A warning screen displays, and the test continues.
2. At the warning screen, press F1 to stop the test and return to the Main Menu.

To continue the test, press F2.

Test in Progress! Do You Want to Abort	
Yes	No
F1	F2

Viewing Test Results

Immediately following, or at any time after completion of a test, you can view results using the 925VST display. The 925VST will store 100 work orders. Each work order can contain results for up to 100 tests.



You can view the following test information:

- General test information
- Far results test details
- Near results test details

To view test results for any test or test suite:

1. At the Main Menu, press 3: View Results.

The Select Result screen displays the available Work Order Numbers.

2. Use the keypad to select the desired Work Order result file.

Use the ▲ and ▼ keys to scroll through list of available Work Orders. Up to 100 work orders can be stored on the 925VST. You can use the last entry in the list to print or export captured results for all work orders the serial port.

3. Use the keypad to select the specific test for which you want to see results.

Each work order can contains test results for many different tests. You must choose which specific test to view results for. Use the ▲ and ▼ keys to scroll through the list of available test result types.

4. Use the keypad to select the test result type that you want to view.

For each test, you can view detailed results specialized for that test (e.g., SMOS Director), or you can view results for DVM (digit volt meter), call progress, test info. Use the ▲ and ▼ keys to scroll through the list of available test result types.

```

Work Order # → 100:SMOS.01      1↓
                1:<SMOS Director>  P
                2:DVM           P
Result Types ← 3:Call Progress  P
  
```

```

Work Order # → 100:SMOS.01      2↑
Result Type → 1:Test Info
              2:Print Results
Print Test Results →
  
```

For information on specific test result types, see the following section, Test Result Types.

In steps 3 and 4, you can use the CLR key to delete the currently viewed work order result file. The last entry in the list is used to print or export all captured results for a selected test using an RS-232 connection.

Test Result Types

Each test has a detailed results specialized for that particular test. The following section describes the options and display screens that are available once you have selected a test in step 4 above.

SMOS DIRECTOR

Once you select the SMOS Director test results, you can view near end and far end test results.

- Near results are results of measurements made at the customer site.
- Far results are results of measurements made at the central office.

```

View SMOS Results
1:<Near>
2:Far
  
```

The results for SMOS Director are shown over three screens. While viewing a screen, you can use the F1 (near) and F2 (far) keys to toggle between near and far results for the same screen. If templates are enabled (see Template on page 15), a P or F will show in the last column and indicate pass or fail respectively.

- MOS: Mean Opinion Score — Voice clarity merit score [1.00 to 5.00]
- Noise: Comfort Noise

```

SMOS Director   N 1↓
MOS:            4.57 P
Noise:          18 dBrnC P
-FS:            0 ms F
  
```

- -FS: Net total of Negative Frame Slips — A measure of voice signal expansion (gapping).
- +FS: Net total of Positive Frame Slip— A measure of voice signal compression (jerking)
- Gain — A relative measure of audio level gain
- BW — The useable effective bandwidth
- Codec — The detected codec type
- Delay — The round-trip delay

```
SMOS Director    N 2↑↓
+FS:             0 ms P
Gain:            0 dB P
BW               98.3 % P
```

```
SMOS Director    N 3↑
Codec:           PCM P
Delay:           0.0 ms P
```

ECHO SOUNDER

You can view level and delay test results.

- Level — Displays return loss level for up to four echoes.
- Delay — Displays echo delay for up to four echoes.

```
Levels (dB)      N
-20P -25P --- ---
Delays (ms)
249F 59P --- ---
```

PVIT MEASURE

You can view statistics and event test results.

- Statistics are near-end metrics of duration, count, and percentage captured during measurement period.
- Events are near-end results showing individual impairment events.

The results for **Statistics** are shown over five screens.

- PL: Packet/Frame Loss — Includes total elapsed test time, net total PL impairment time, PL event count, and PL percentage of total time.

```
View PVIT Results
1:<Statistics>
2:Events

PL          000:00:08 1 ↓
Duration    0ms P
Count       0
Percentage: 0.00%P
```

- +PS: Positive Packet/Frame Slips — A measure of voice signal compression (jerking). Includes total elapsed test time, net total +PS impairment time, +PS event count, and +PS percentage of total time.

```
+PS          000:00:08 2↑↓
Duration    10ms P
Count       0
Percentage: 0.50%P
```

- -PS: Negative Packet/Frame Slips — A measure of voice signal expansion (gapping). Includes total elapsed test time, net total -PS impairment time, -PS event count, and -PS percentage of total time.

```
-PS          000:00:08 3↑↓
Duration    10ms P
Count       0
Percentage: 0.50%P
```

- VC: Voice Clippings — Includes total elapsed test time, net total VC impairment time, VC event count, and average event duration.

VC	000:00:08	4	↑↓
Duration	10ms	P	
Count:	0		
Average:	0msP		

- Noise: Transient Impulse Noise — Includes total elapsed test time, noise event count, and average event duration.

Noise	000:00:08	5	↑
Count:	0		
Average:	0	dBrnC	P

The results for **Events** are shown on as many screens as there are recorded events. Results include event type, event duration, and time stamp. Event types can be:

Event		1	↓
PL	10ms		
Time:	00:00:08		

- IS — In_SYNC
- RS — SYNC Recovered
- SL — Signal Lost, SYNC Lost
- SR — Signal Recovered
- PL — Packet/Frame Loss
- PS — Packet/Frame Slip (Delay Variation)
- VC — Voice Clip
- NH — Noise Hit
- DC — Detection of Clock Drift

FAXTX

You can view the test result message.

- Passed — The fax message was satisfactorily received by the answering fax machine.
- CED length — The duration of the fax answer tone (2100 Hz) falls outside the valid range of 2.6s to 4.0s. The answering device may be an invalid fax machine or the communication link has squelched out a portion of the CED tone.
- CED/DIS Detect T/O (CED or DIS detection time out) — The Sage fax emulator has not detected a valid CED tone (fax answer tone) or DIS packet (digital identification signal, which contains the capabilities of the fax machine) from the answering device within 15 seconds after call establishment. The called terminal may not be a valid fax machine or the communication link has distorted the CED and DIS signals.

Transmit FAX
Passed

- DIS Info Error — The received DIS packet contains errors that violated the HDLC frame structure. The errors could be due to CRC error or invalid control and address fields. The DIS signal may have been degraded by the communication link.
- Non-V27 Modem Type — The answering fax machine does not support the mandatory V.27ter type of modem.
- CFR Info Error — The received CFR (confirmation to receive) packet contains errors that violated the HDLC frame structure. The errors could be due to CRC error or invalid control and address fields. The CFR signal may have been degraded by the communication link.
- CFR Request Retrain — The answering fax machine is not happy with the pre-message training or DCS signals due to communication link problems. It requests the Sage fax emulator to resend the DCS and training sequences.
- CFR Detect T/O (detection time out) — The Sage fax emulator has not detected the CFR packet after the completion of the training and TCF sequences within 10 seconds.
- MCF Info Error — The received MCF (message confirmation) packet contains errors that violated the HDLC frame structure. (The answering fax machine transmits an MCF packet to report the message has been successfully received and it is ready to receive more pages.) The errors could be due to CRC error or invalid control and address fields. The MCF signal may have been degraded by the communication link.
- MCF Detect T/O (detection time out) — The Sage fax emulator has not received the MCF packet within 10 seconds after sending the EOP (end of page) packet.
- Failed — The fax message has not been satisfactorily received by the answering fax machine due to errors in the communication link under test.

DTMF CALLBACK

You can view the following results.

- Near — Displays failed DTMF digits.
- Far — Displays failed DTMF digits.
- Ring Volt — Displays callback ring voltage.
- Ring Freq — Displays callback ring voltage.

Near:	Pass
Far:	Pass
Ring Volt	85.7 V P
Ring Freq	20 Hz P

100 DIRECTOR

You can view the following results.

- cmsg — C-message filter noise measurement (dBrc)
- 3k flat — 3KHz flat filter noise measurement (dBrc)
- erl — Echo return loss (dB)

102 DIRECTOR

You can view the following results.

- level — 1004 KHz loss (dB)

- cnotch — C-message notch filter noise measurement (dBmnc)
- s/n — Signal-to-noise measurement (dB)

DVM

The results for DVM show the line parameters for the test interface.

- On Hook Voltage
- Loop Current

On Hook Voltage	
-51.3 V	P
Loop Current	
33.0 mA	P

CALL PROGRESS

The results for Call Progress show the test call connection parameters.

- Dial Tone Delay — off-hook to dial-tone detection elapsed time
- Connect Time — last out pulsed digit to farend TPT detection elapsed time

Dial Tone Delay:	
597 ms	P
Connect Time:	
4.1 s	P

TEST INFO

The results for the Test Info show the test call identification parameters in two screens.

- Circuit ID — phone number under test
- Responder ID — farend test responder number
- User ID — field test person ID
- Work Order — work order number for test

Circuit ID:	1↓
761-0000	
Responder ID:	
777-8787	

User ID:	2↑
Steve23	
Work Order:	
1237777098	

Exporting Results

Results can be exported in space delimited, ASCII format through the 925VST serial port. Result should work with any PC terminal emulator program set to VT100 (i.e. Hyperterm). There are three levels of result export:

- All results: Exports results for all work orders.
- Single work order: Exports results for a selected work order.
- Single test results: Exports results for a selected test.

For information on connecting via an RS-232 cable, see Serial Port on page 15.

Remote Control of the 925VST

You can control the 925VST by connecting the 925VST to a computer via an RS-232 cable and sending a series of commands. You can configure, start, or abort tests, and print the last test results to the serial port.

Setting Up

1. Connect the RS-232 cable to the small DIN connector at the top of the 925VST.
2. Connect the other end of the RS-232 cable to an available serial port configured for 38400 baud, 8 data bits, and no parity (8N1).
3. Configure your PC terminal emulator to echo local characters.
This step is recommended because the 925VST will not echo received characters. You will only be able to see what you type if you echo local characters.

4. Turn on the 925VST.

Your PC should display a screen similar to the example below.

```
*****  
* 923 BOOT LOADER, v 2.01 May 6 2001 *  
*****  
  
925VST Revision 2.5004 - 15-SEP-2003  
(c) 1997~2003 SAGE Instruments Inc.  
  
Ready...  
  
Login>
```

5. Hit the NEXT key to advance to the main menu.

Two types of commands are available — user level and test level — and are described in the following sections.

User Level Commands

To use user level commands, simply enter the command at the Login> prompt.

The following table contains an overview of the user level commands. Details about each command follow.

interface	Changes the circuit interface parameters
settl	Sets the type of test line the 925VST will be when it answers an incoming call in responder mode

tldur	Sets the time out timer that causes "continuous" test lines (i.e. Echo Generator and PVIT) to stop and reset when the timer expires
smos	Sets the TPT (test progress tone) duration, Send TLP (test level point) and Receive TLP for the SMOS test line
pvit	Sets the filter type and transmit signal level of the PVIT test line
egen	Sets the inserted loss and inserted delay of up to two echoes generated by this test line
tlstart	Forces a test line to start
tlstop	Forces a test line to stop and reset for the next incoming call

INTERFACE

Interface [loop600|loop900|gnd600|gnd900|4wire]

The interface command changes the signaling and impedance parameters of the circuit interface. The changes take effect on next test. There is no need to reboot the 925VST.

Example: interface loop600

The example command would set the interface to 2-wire, normal start, 600 ohm.

If you send the command interface without any parameters, the 925VST will report the current interface settings.

Example: Current interface is 2 wire, Normal Start, 600 ohm

SET DEFAULT TEST LINE TYPE

settl [smos|pvit|egen] or sttl [s|p|e]

Use this command to set the type of test line the 925VST will be when it answers an incoming call in responder mode. If the 925VST is not in responder mode, this command places it in the specified mode. If the 925VST is already in responder mode, the 925VST must be rebooted for the new responder mode to take affect.

If you send the command settl without any parameters, the 925VST will report the current test line type.

SET TEST LINE DURATION

tldur [duration]

This command only applies to echo generator and PVIT test lines. The SMOS test line automatically stops and restarts for the next call when the test finishes. However, the Echo Generator and PVIT tests are "continuous" tests and will not stop even if the calling end hangs up.

The tldur command sets the value of a time out timer that causes the these "continuous" test lines to stop and reset when the timer expires. The allowable range, in seconds, of duration is 1 to 999.

If you send the command tldur without any parameters, the 925VST will report the current test line duration setting.

Example: Test would time out in 300s

SET SMOS TEST LINE PARAMETERS

smos [TPTlength [SendTLP [ReceiveTLP]]]

Use this command to set the TPT (test progress tone) duration, Send TLP (test level point) and Receive TLP.

- TPTlength is the length of the TPT burst [1..99] seconds.
- SendTLP and ReceiveTLP are the send and receive transmission level points [-50..0] dBm.

If you send the command smos without any parameters, the 925VST will report the current SMOS test line parameters.

Example: Current SMOS test line parameter is
TPT burst length: 10s
Send TLP: -1dBm
REceive TLP: -10dBm

SET PVIT TEST LINE PARAMETERS

pvit [filtertype [level]]

Use this command to set the filter type and transmit signal level.

- filter type is either 'c' (C-message) or 'p' (Psophometric); C-message for North America, Psophometric for all other places.
- level is test signal level in dBm and must be an integer from -30 to 0.

If you send the command pvit without any parameters, the 925VST will report the current PVIT test line parameters.

Example: Current PVIT Sender test line parameter is
filter: C-message
Test signal level is -16dBm

SET EGEN TEST LINE PARAMETERS

egen [level_1 delay_1 [level_2 delay_2]]

Use this command to set the inserted loss and inserted delay of up to two echoes generated by this test line.

- level(dB) must be an integer between -60 to 9 for 4-wire or -40 to 9 for 2-wire.
- delay must be an integer between 16 to 600 (ms).

If you send the command egen without any parameters, the 925VST will report the current EGEN test line parameters.

Example: Current echo generator parameter is
level_1: -10dBm, delay_1: 30ms

TEST LINE START

tlstart

The test line start command takes no arguments. This command forces the test line to start. This command only applies in 4-wire mode.

TEST LINE STOP

tlstop

The test line stop command takes no arguments. This command stops the currently running test and waits for the next incoming call. This command only applies in 4-wire mode.

Test Level Commands

To use test level commands, you must first login in:

- At the Login> prompt, type “login test test” and press enter.
The first “test” is the profile name, and the second “test” is the password.
The 925VST answers with “925 Remote Interface Ready.” Once logged in, the Login> prompt is longer displayed.
- Type “i” and press enter to disable the 925VST inactivity power-off timer.
The 925VST acknowledges this command by returning “ok”.

The following table contains an overview of the test level commands. Details about each command follow.

i	Initialize the remote interface: used to disable the inactivity power-off timer
g	Go: Initialize dialing to a responder to begin a test
s	Setup circuit ID, work order and user Id info fields
x	Exit the remote interface
p	Print results of last test
e	Exits a continuous test

INITIALIZE

i

The initialize command takes no arguments. It is used only to disable the inactivity timeout timer to prevent the 925VST from automatically powering off.

Go

g [responder ID, 'template name']

Use the go command to dial a responder and request a particular template to use.

The responder ID is the phone number to dial to connect to the responder. The template name must be in single quotes and is the actual name of the template to use in the responder.

An acknowledgment of the command is sent:

Dialing #Responder ID : Test Name : template name

Once a test call has started, there is no further acknowledgment until either the call has completed or been aborted. If the call completed normal, the response Call Complete is sent. If the call aborted due to an incorrect responder number, a bad template name, SUPR packet failures, or other errors, the response Aborted is sent.

SETUP

s [circuit ID, 'User ID', 'work order']

Use the setup command to setup information that gets passed to the responder as part of the test.

The circuit ID is the phone number of the 925VST performing the test. This is required for tests that have call-back enabled. The User ID is a 20-character alphanumeric field that can contain any user identification information desired. The contents of this field must be in single quotes. The work order is a 20-character alphanumeric field that can contain any information desired. The contents of this field must be enclosed in single quotes.

An acknowledgment of the command and the parameters is sent:

Setup: CID:Circuit Id, UID:User Id, W/O:Work Order

EXIT

x

This exit command exits out of the remote control interface and restores the inactivity timeout timer to normal operation. Note that there are two exit commands; the other is listed below.

PRINT

p

The print command prints the results of the last test.

EXIT

e

This exit command causes a continuous test to complete. Note that there are two exit commands; the other is listed above.

Using the 925VST as a Telephone

When the 925VST is connected to a working phone line, you can use it as a telephone handset. A telephone speaker and microphone are located on the back of the 925VST. The speaker volume is automatically adjusted to a level suitable for use as an earphone.

NOTE: When the 925VST is connected to a working phone line, it can receive telephone calls even when it is turned off.

To use the 925VST as a telephone:

1. Use the supplied cord to connect the 925VST to an operating phone line.
2. Press the TALK key, and listen for a dial tone.

The display shows the last number dialed. The 925VST goes off hook, and the alpha-numeric keypad functions just like a telephone keypad. At any time, press the TALK key again to disable the telephone function.

3. Dial the desired number, or press NEXT to dial the displayed number.
Dial access numbers and area codes just as you would from a regular telephone on the line.
4. To hang up, press the TALK key.