

Sine on Random Operating Manual

Chapter 1 - Introduction

1.1 Introduction

This manual describes the theory and operation of the PUMA Vibration Control System (VCS) when running the Sine on Sine on Random Application. Note that the Receiving Checkout Tests (RCT's) are used as examples and should be referred to often.

This manual is presented in nine chapters relating information about the applicable menus required to set up the operating parameters for the Puma Vibration Controller.

1.2 Getting Started

Before you begin, read the *PUMA System Description Manual*. This will help familiarize the user with the system, and give required information for unpacking, assembly and operation.

1.3 Software and Manuals

Software and manuals (along with vendor manuals, calibration devices and service training) are sold in various combinations.

1.3.1 Software

The Sine on Random closed-loop vibration control program and options are supplied on CD ROM. This CD ROM contains executable code for Sine on Random, test parameters, schedule parameters and the micro code for peripheral devices. The **software** is **licensed** and **requires a key** to activate it. The key and drivers are supplied on diskette.

1.3.2 Manuals

The PUMA VCS is supplied with a set of two system manuals and an application manual.

- *PUMA System Description*
Part Number 2400-0100

Other manuals may be included as purchase options.

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1.4 Sine on Random Features

The PUMA VCS and the Sine on Random program provide digital real-time closed loop shaker control for production testing, design qualification and reliability testing applications. The system allows the definition, simulation, and closed loop control of Sine on Random vibration excitation of a vibration shaker system.

The principal features of the Sine on Sine on Random software are:

- ❑ Reference Spectrum – Up to 500 amplitude/frequency breakpoints/slopes
- ❑ Frequency Ranges – 50 to 20,000 Hz (in eight ranges)
- ❑ Resolution – 100, 200, 400 & 800 lines; expandable to include 1,600 and 3,200 lines
- ❑ Degrees of Freedom (DOF) – User defined (8 to 1,000)
- ❑ Control Accuracy - ± 1 dB for flat reference with 120 DOF with 90% statistical coincidence
- ❑ Output Type – True Gaussian Sine on Random noise
- ❑ Sigma Clipping – Off, 2.5 to 6 sigma
- ❑ Control Strategy – Single point, multi-point average or extremal
- ❑ Automatic Operation – Selectable equalization start level, initial test level, level increment, time to full test level, startup rate and shutdown rate.
- ❑ Level Scheduling – User defined level, time at level, transition time to each level
- ❑ Test Schedule – User defined sequence of independent tests can be scheduled to run automatically
- ❑ On Line Controls – Step Level Up, Step Level Down, Full Level, Pause, Resume, Drive Update On/Off
- ❑ Analysis Function – Power Spectral Density (PSD) for control, auxiliary channels, drive, error functions, transfer functions (mag, phase & coherence), transmissibility and time traces.

1.4.1 Safety Features

Sine on Sine on Random provides the following safety features to protect the operator, the test equipment and the manufacturing operations:

- ❑ Shaker Limits
- ❑ Password login to prevent unauthorized system operation (optional)
- ❑ Alarm / Abort messages to indicate abnormal test conditions
- ❑ Alarm / Abort tolerance limits set by the operator for each spectral line

- ❑ Total overall acceleration RMS Alarm / Abort level operator settings for the acceleration spectrum
- ❑ User specified active frequency range for Alarm / Abort conditions
- ❑ A loop check continuity test automatically precedes each test
- ❑ Sigma clipping to prevent drive level from exceeding a threshold value
- ❑ Controlled test startup / shutdown rates
- ❑ Aborted testing for any control signal loss or excessive fluctuation
- ❑ Manual test Abort
- ❑ Abort documentation for post-test analysis

1.4.2 Options

The following options may be purchased for use with the system.

1.4.2.1 Security

The Security Option package enables the system administrator to place limits on the system including who has access and what level of access is available to individual users.

1.4.2.2 Automation

The Automation Option package includes RCI, RCP, Print Automation, Test Automation, Mission Simulation and True Networking.

1.4.3 Compatible Equipment

The PUMA VCS connects to any commercially available electro-dynamic or electro-hydraulic shaker and amplifier.

1.4.4 Reliability

The PUMA Vibration Controller is designed and manufactured with state-of-the-art components and processes that improve the reliability of the system.

1.4.5 User Interface

The PUMA VCS, runs under a Microsoft Windows 95 (up to version 1.5.2), Windows 98 SE, Windows 2000 or NT 4.0 operating system. All user interaction is by keyboard and mouse. Test setup, control and data are displayed on a high-resolution color monitor. User help information is available for all program functions.

The color monitor provides real-time displays of:

- ❑ Program control menus
- ❑ Test definition parameters
- ❑ Spectra showing test conditions, with Abort / Alarm information.
- ❑

Chapter 3 - Getting Started

3.1 Introduction

The Spectral Dynamics Computer Aided Test Suite (CATS) Vibration Controller program is called Puma. It can be started by either a desktop shortcut icon or through the Start button. The path is <Start> ⇒ **PROGRAMS** ⇒ **SPECTRAL TEST SUITE** ⇒ **PUMA**.

3.1.1 Log In

If the **Security** option (see paragraph 5.2.8) is in place the **User Log In** Dialog Box (Figure 3-1) appears. If there is no Security option the screen will appear as shown in Figure 3-2. To access the features of the PUMA Vibration Controller program you must have a valid users name and password. See the system administrator for proper users name and passwords.

Enter a **User Name** and **Password** and click <LOG IN>. The Puma Program Entry Screen shown in Figure 3-2 will appear. The Puma Version Splash screen will disappear in several seconds (or can be dismissed by clicking on it) leaving the **New** Dialog Box from which the desired application can be launched. Click on **SINE ON RANDOM**, and then click OK.

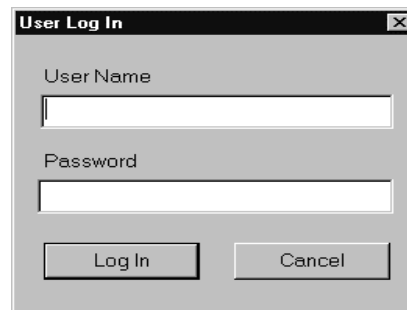


Figure 3-1. User Log In Dialog Box

A screen similar to the SINE ON RANDOM Screen shown in Figure 3-3 appears. Exact screen layout is dependent on the parameters previously set with the menu options under Puma.

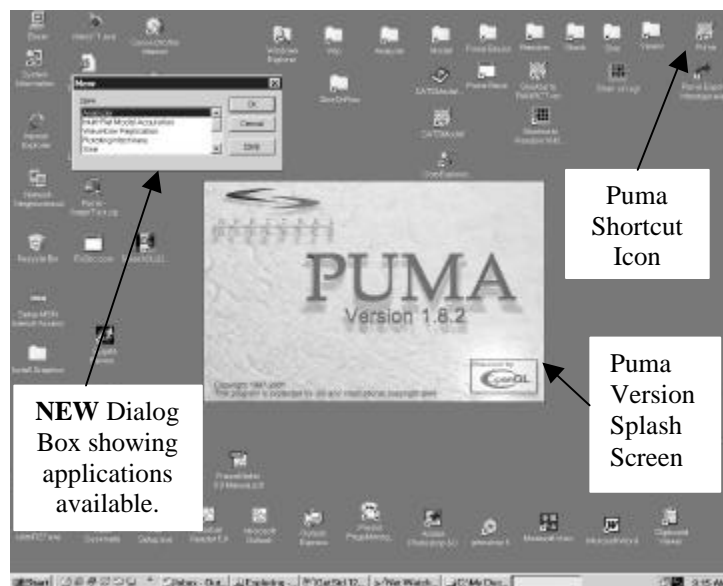


Figure 3-2. Puma Program Entry Screen

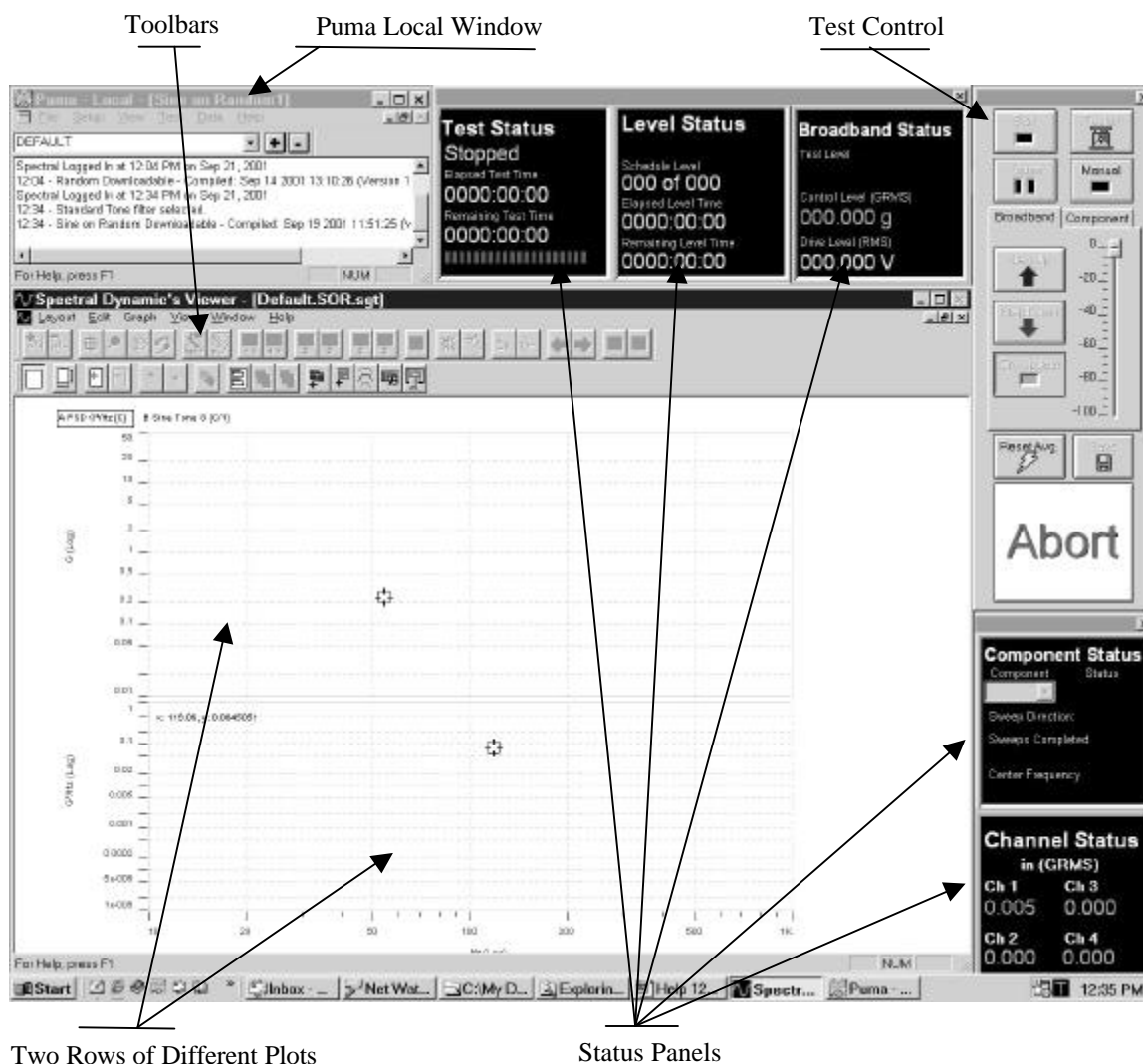


Figure 3-3. Typical PUMA Random Screen Replace later.

3.1.2 Puma Window

The **Puma Window's Title Bar** displays three segments of information (**Puma —Local —Sine on Random 1**). The **Local** next to Puma indicates the user is running on the Local Puma system and not across the network. **Sine on Random 1** is the name of the currently loaded test. If the **Puma** window is inaccessible minimize or drag the **Spectral Dynamics Viewer** window out of the way. Click on the **Puma** Window to make it the active window to start the process of setting test parameters.

3.1.3 Random Menus

The **Puma Window's Menu Bar** contains six menu selections used by the PUMA Vibration Controller program. They are: **F**ILE, **S**ETUP, **V**IEW, **T**EST, **D**ATA, and **H**ELP. Each of these is discussed further within their own chapter.

Using hotkeys can activate many of the menu selections. An underlined letter indicates the character to use in conjunction with the <ALT> key. For instance, use <ALT> + <F> to activate the **F**ile menu.

Select **LOG OUT** from the **FILE** menu when the system is unattended, and access to the program is to be restricted. The user must log in again to resume using the system. When logged in, the **LOG OUT** menu item is available (**LOG IN** is grayed out).

3.1.4 Setting Up Parameters

Initiating a test is done by either starting a new one from the very beginning or by running one that has already been predefined and saved to a file.

3.1.4.1 New Test

The **SETUP** Menu options are presented in Chapter 5.

Procedural Steps

1. Click **SETUP** ⇒ **CHANNELS**. The Channel Definition Window appears. See Figure 3-4 and paragraph 5.2.1 for details.

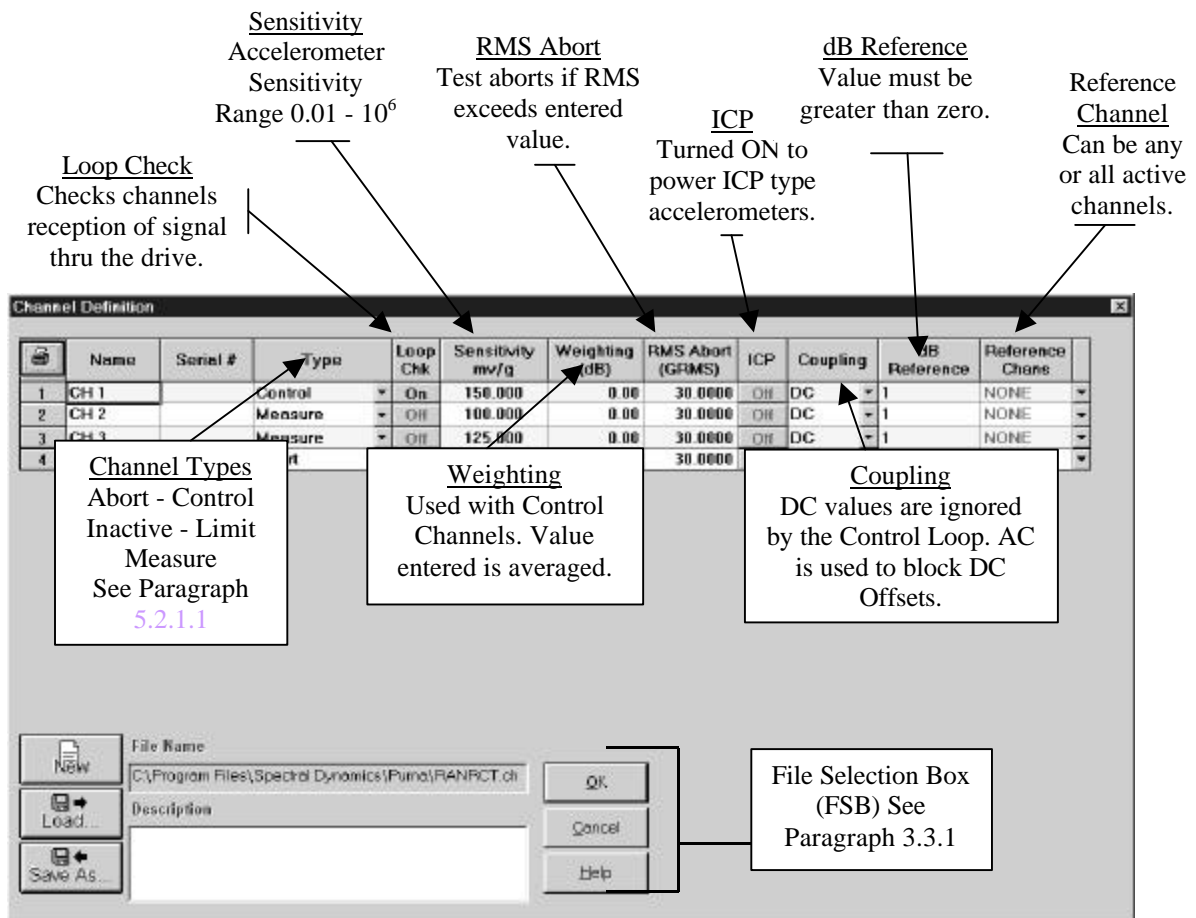


Figure 3-4. Channel Definition Window

2. Input the required parameters and save them to a file.
3. Click **SETUP** ⇒ **BROADBAND PROFILES**. The Profile Settings Window appears. See Figure 3-5. Refer to paragraph 5.2.4 for Profile Definition information.
4. Input the required parameters and save them to a file.
5. Click **SETUP** ⇒ **SCHEDULES**. The Schedule Setup Window appears. See Figure 3-6.
6. On the **Level Schedule** Index Tab, input the required parameters and save them to a file.

The test is now ready to run

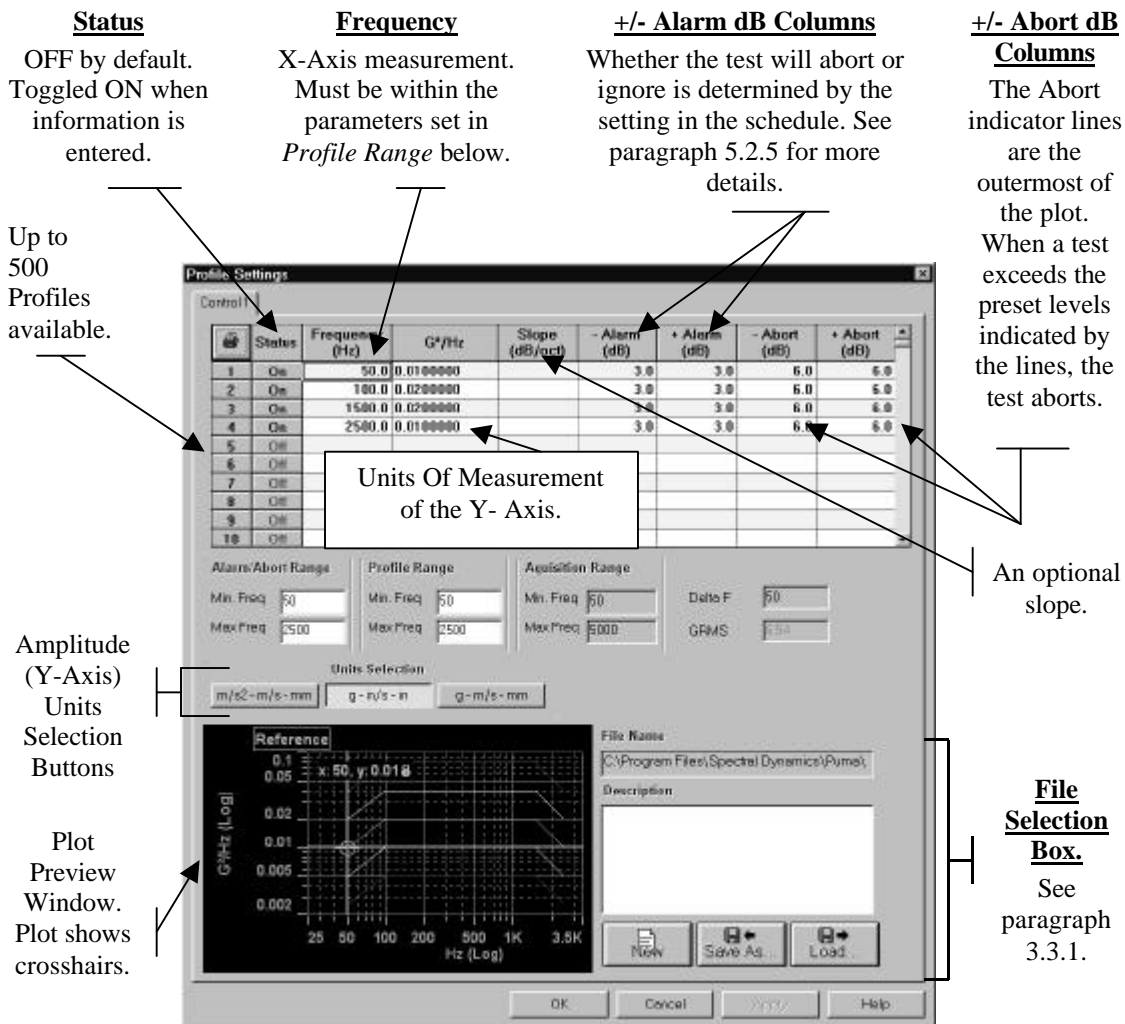


Figure 3-5. Broadband Profile Settings

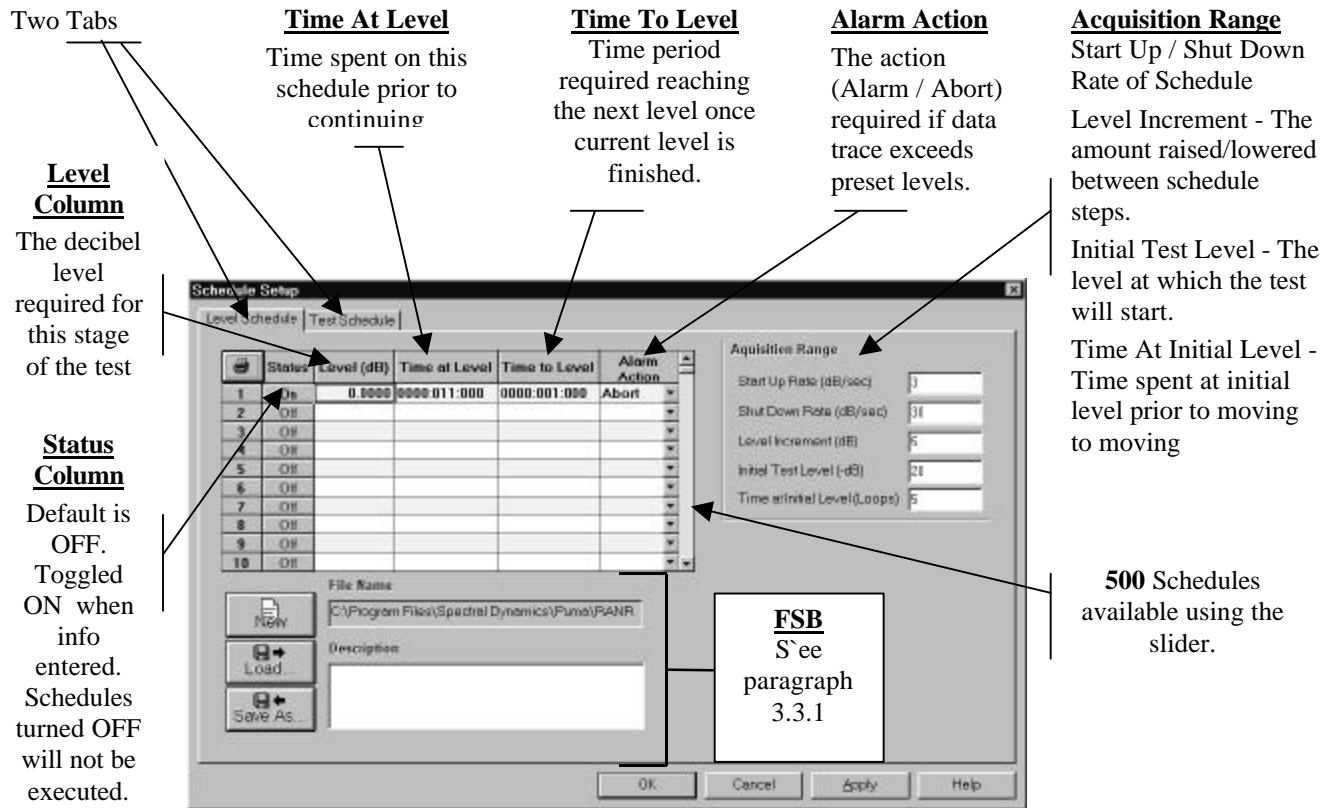


Figure 3-6. Schedule Setup

3.1.4.2 Existing Test

Procedural Steps

1. Click **FILE** ⇒ **NEW** The **New** Dialog Box appears. See Figure 3-7.
2. Click **SINE ON RANDOM** ⇒ **<OK>**. See Figure 3-8. The screen defaults to the one used last.
3. Click **FILE** ⇒ **OPEN**. See Figure 3-9.
4. Select appropriate **Files of Type** filter from the drop down list box.
5. Navigate to the required drive/directory (folder) the **Look In** drop down list box.
6. Select and open appropriate directory in the list box.
7. Select and open test file.
8. Click **<OPEN>** on the standard Windows File **Open** Dialog Box.

The test is ready to run.

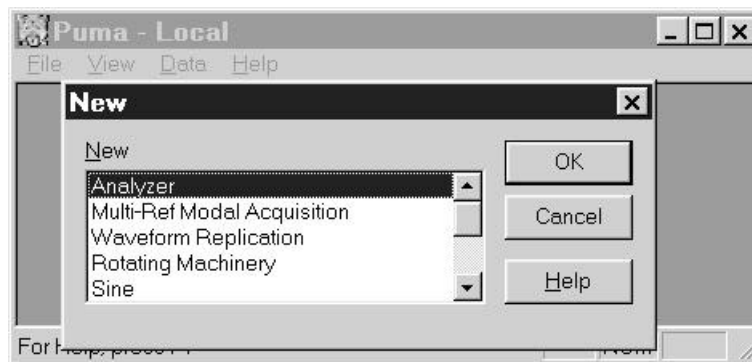


Figure 3-7. NEW Dialog Box

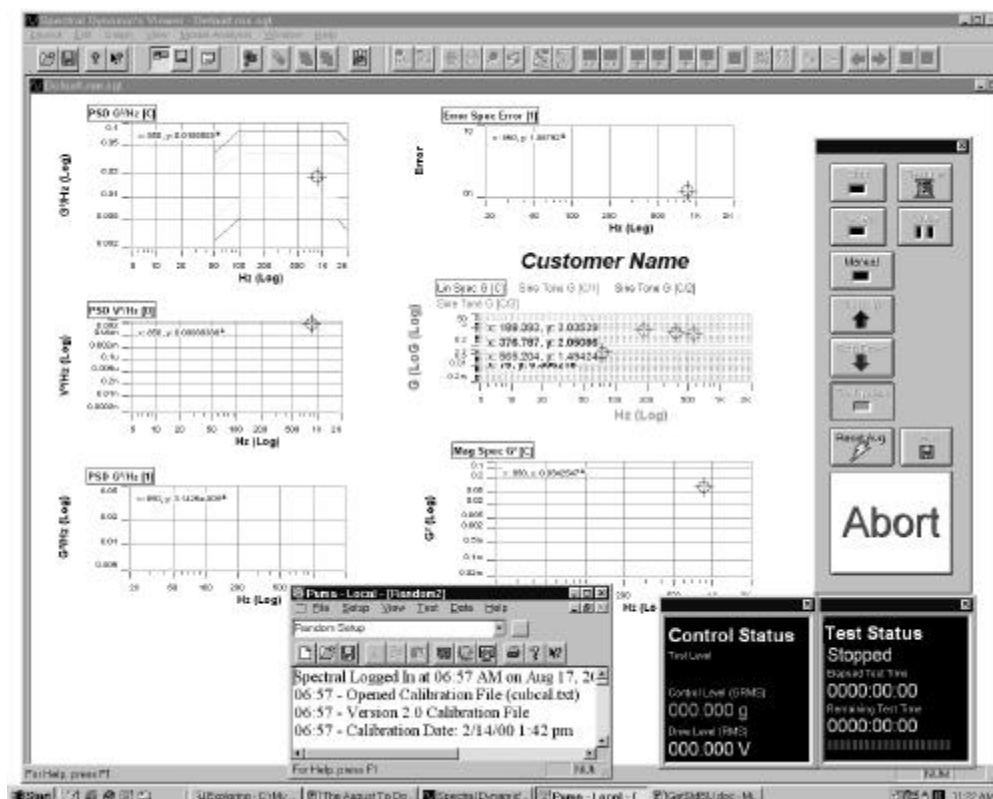
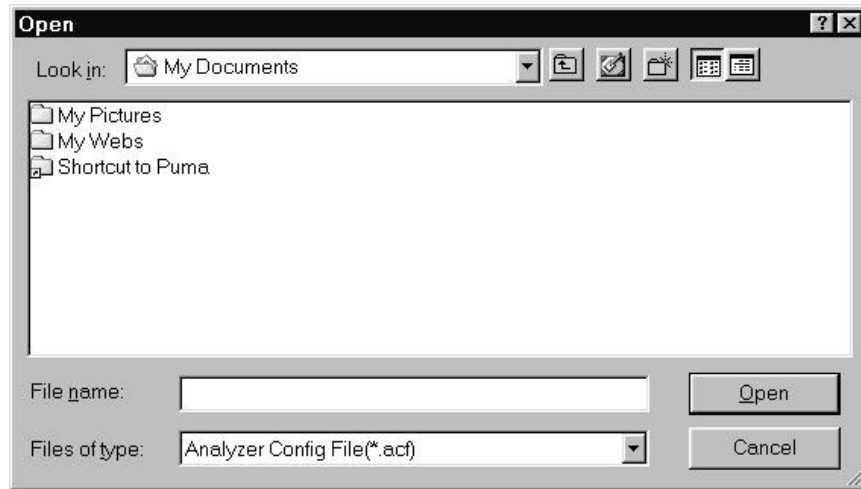


Figure 3-8. Results of Sine on Random ⇒ OK. Replace

Figure 3-9. Results of **File** => **Open**

3.2 Arranging Screen Components

While running PUMA there will always be at least two windows on the screen (**Puma** Window and the **Spectral Dynamics Viewer** Window). There can also be a test control and various status panels. The location of these components is completely customizable. The Desktop Toolbar in the Puma Window (Figure 3-10) allows multiple screen layouts to be saved and recalled.

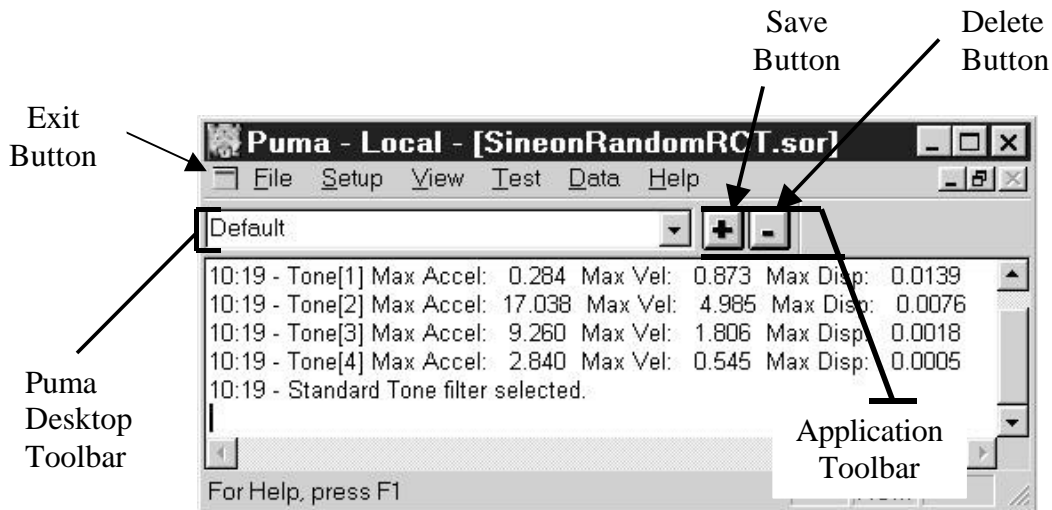


Figure 3-10. Desktop Toolbar

In the example in Figure 3-10, “Default” is the screen layout name. To create a new layout, size the windows, arrange the plots, status panels and control as needed. Select the name in the Puma Desktop Toolbar and enter a new name. Click the save button. Saved layouts are available from the pull down menu button in the toolbar name box.

Clicking the Exit Button launches the **APPLICATION CONTROL MENU**. See Figure 4-3. This is a common Windows menu and can also be launched by right clicking the Title Bar. One set of options is available in the maximized window presentation. Another set of options is available from a restored size window.

3.3 Common Areas of Host Dialogs

The layout of dialog boxes sometimes differs from one menu option to another. Even though the command buttons may be in a different position they will work the same from one menu option or window to another.

3.3.1 File Selection Box

Throughout PUMA there is a need to save the parameters of tests, load those same parameters for another test or just start on something brand new. The File Selection Box (FSB) (Figure 3-11) is shown in the lower left hand corner of Figures 3-4 and 3-6 and the lower right hand corner of Figure 3-5. It is a common Windows tool and is used throughout the PUMA platform though sometimes the format is somewhat different. The components of the FSB are outlined below for the primary setup areas of Channel Definition, Profile Settings and Schedule Setup.

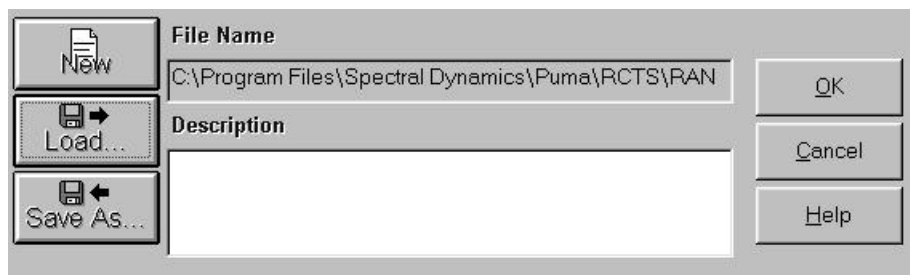


Figure 3-11. File Selection Box

3.3.1.1 New Selection Command Button

Active Dialog Box	Result of Selecting NEW from the File Selection Box
<input type="checkbox"/> Channel Definition	The path / name of the currently open file is deleted from the File Name text box. It does not delete the numbers from any of the columns. It is not active during a test.
<input type="checkbox"/> Profile Settings	Clears all columns of data. It is not active during a test.
<input type="checkbox"/> Schedule Setup	Clears all columns of data. The path / name of the currently open file is deleted from the File Name text box. It is not active during a test.

3.3.1.2 Load File Command Button

This button reacts the same way in all three parameter input areas. The **Open** Dialog Box is displayed for the user to choose a file to be loaded. All three areas are **active** during a test.

3.3.1.3 Save As Command Button

This button also reacts the same way in all three parameter input areas. The **Save As** Dialog Box is displayed for the user to save a file. All three areas are **not** active during a test.

3.3.1.4 OK Command Button

This button accepts any changes made, applies them and closes the **Open** Dialog Box.

3.3.1.5 Cancel Command Button

This button closes the **Open** Dialog Box without applying any changes that may have been made.

3.3.1.6 Apply Command Button

This button applies any changes that have been made and keeps the dialog box open.

3.3.1.7 Help Command Button

This button launches the on-line help. If a dialog box is open it must first be closed to launch the help menus.

Chapter 4 - File Menu

4.1 Introduction

The first of the six menu options in the PUMA Vibration Control System (Vibration Controller) is the **FILE** Menu option. Refer to the following chapters for other menu options.

4.2 The File Menu

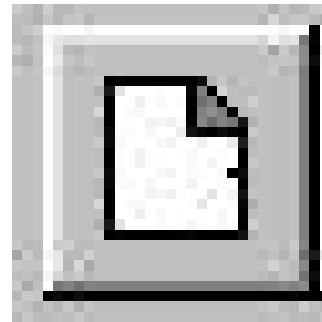
When the user selects **FILE** from the Sine On Random Menu Bar, the menu shown in Figure 4-1 will display. The **FILE** menu option has 16 sub-menus and a seven-file list (called a recent-file list) contained in a seven-section drop-down menu list. The recent-file list allows rapid access to files that have recently been used.

4.2.1 File Sub-Menus

The sub-menus (Figure 4-1) of the PUMA Sine On Random **FILE** Menu option are outlined below. After the test is started, the menu options change.

4.2.1.1 New Menu Option

When **NEW** is selected, the **New Option List Box** will display. See Figure 4-2. This will initialize the test parameter settings for the test application chosen. Only test applications that are licensed for the system will appear in the box. Available test applications are:



- | | |
|--|--|
| <input type="radio"/> Analyzer | <input type="radio"/> Random |
| <input type="checkbox"/> Multi-Ref Modal Acquisition | <input type="radio"/> Random on Random |
| <input type="checkbox"/> Waveform Replication | <input type="radio"/> Sine On Random |
| <input type="radio"/> Rotating Machinery | <input type="radio"/> Classical shock |
| <input type="radio"/> Sine | <input type="radio"/> Shock Synthesis |



Options Prior To Test



Options During Test

Figure 4-1. File Menu Submenus

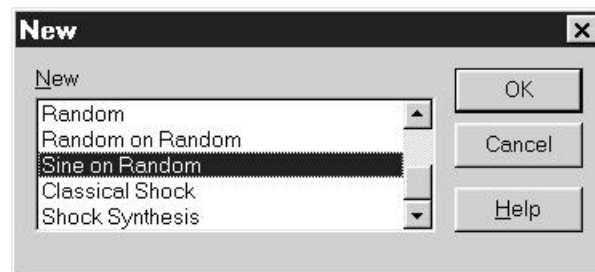
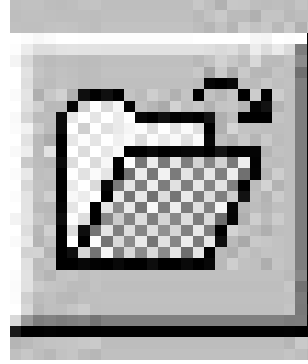


Figure 4-2. New Option List Box

Clicking on the **N**EW menu option and selecting another test while working on a test will initiate the display of a **S**AVE prompt unless there were no changes made to the test that was downloaded to work on.

4.2.1.2 **Open Menu Option**

The **OPEN** menu option allows the user to select a previously stored test setup file. It displays a standard Windows **Open** (file) Dialog Box. The user can navigate to the desired file and open it. If the user wants to load a different test type (e.g. Sine) simply select the setup and Puma will automatically change to the appropriate application.

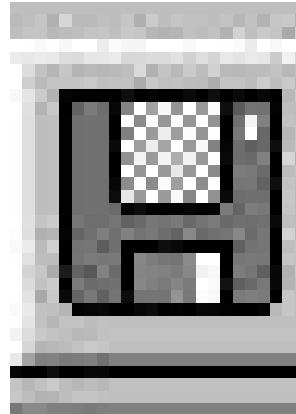


4.2.1.3 **Close Menu Option**

The **CLOSE** menu option closes the currently loaded test setup. When **CLOSE** is clicked a **SAVE** prompt is displayed if the current test setup has had changes made to it. If no changes were made the currently displayed window will close.

4.2.1.4 **Save Menu Option**

When **SAVE** is clicked the first time a standard Windows **Save As** Dialog Box appears. It allows the user to save the currently loaded test setup. After the test has been named and saved as a file, clicking the button will not display any visual markers except the Save Progress Bar which briefly displays on the Status Bar during the time the file is being saved to disk.



4.2.1.5 **Save As Menu Option**

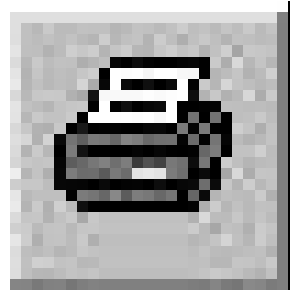
The **SAVE AS** Menu Option allows test setup parameters to be saved under a new file name. This option also launches the standard Windows **Save As** Dialog Box.

4.2.1.6 **Print Setup**

PRINT SETUP is a standard Windows command that allows the user to select a printer, the size and source of paper and the orientation of the page. These selections will affect how things are printed when the **Print** option is used.

4.2.1.7 **P**rint

Click on **P**rint to launch the standard Windows **Print** Dialog Box. From here the user may select a printer, what is to be printed and how many copies are required. The option to print to a file is also available.



4.2.1.8 **S**end

SEND is a standard Windows command for sending files / tests via e-mail.

4.2.1.9 **L**og **I**n

If the Security Option is installed, the **L**OG **I**N option is not available when the user is already using PUMA. It becomes available after logging out.

4.2.1.10 **L**og **O**ut

If the Security Option is installed, the **L**OG **O**UT option is only available when the user is logged in to PUMA.

4.2.1.11 **S**ystem **L**ock/**S**ystem **U**nlock

These two features come with the security options. When **S**YSTEM **L**OCK is selected, the system is locked and that option becomes disabled. The **S**YSTEM **U**NLOCK option is then enabled. To regain access to the program, the user must select **S**YSTEM **U**NLOCK. The **User Log In** dialog box will display and allow you to login.

4.2.1.12 **R**ecent **F**ile **L**ist

The recent file list is a standard Windows feature that has been adopted for Puma. It allows the user quick access to the most recently used setup files that have been opened. These files are also available from the Windows Start menu. The path for usage is:

<Start> ⇒ **D**OCUMENTS ⇒ **F**ile **N**ame

4.2.1.13 **E**xit

EXIT is a standard Windows command. Exiting the program can be accomplished in three ways. The user can navigate **F**ILE ⇒ **E**XIT or click the **Exit** Button to access the **APPLICATION CONTROL MENU** (Figure 4-3), or by clicking on the close button (**X**) in the upper RH corner of the screen. Any of these will terminate the application.



Options Obtained in a Maximized Window



Options Obtained in a Restored Window

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Figure 4-3. Application Control Menu

4.2.2 Menus Available During The Test

While a test is running, not all of the **FILE** Menu options are available for use. The available **FILE** Menu options during a test are:

- | | | | | |
|--|--|---|--|---|
| <input type="checkbox"/> P<u>R</u>INT | <input type="checkbox"/> P<u>R</u>INT | <input type="checkbox"/> S<u>E</u>ND | <input type="checkbox"/> L<u>O</u>G | <input type="checkbox"/> S<u>Y</u>STEM |
| S<u>E</u>TUP | | | O<u>U</u>T | L<u>O</u>CK |

Chapter 5 - Setup Menu

5.1 Introduction

The **S**ETUP Menu is where all of the test parameters are entered for a Sine on Random test setup. In most of the test setup submenus (e.g. channel definition) the individual test settings may be saved in a separate file that may be recalled by another test setup to speed creation of subsequent tests.

5.2 Submenus

The following paragraphs give information about the nine **S**ETUP submenu options available. See Figure 5-1.

5.2.1 Channels

The **C**HANNELS Menu option produces a Channel Definition Window (Figure 5-2) that allows the user to:



Figure 5-1. Setup Menus

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- ❑ Print a listing of the Channel Definition settings
- ❑ Change any or all of the 11 Channel Definition parameters
- ❑ Open a new file
- ❑ Load a previously saved test/file
- ❑ Use the **SaveAs** option to name/save a file
- ❑ Accept default / user selected file names and initiate selected action
- ❑ Cancel selection / window
- ❑ Get Help

5.2.1.1 Channel Definition

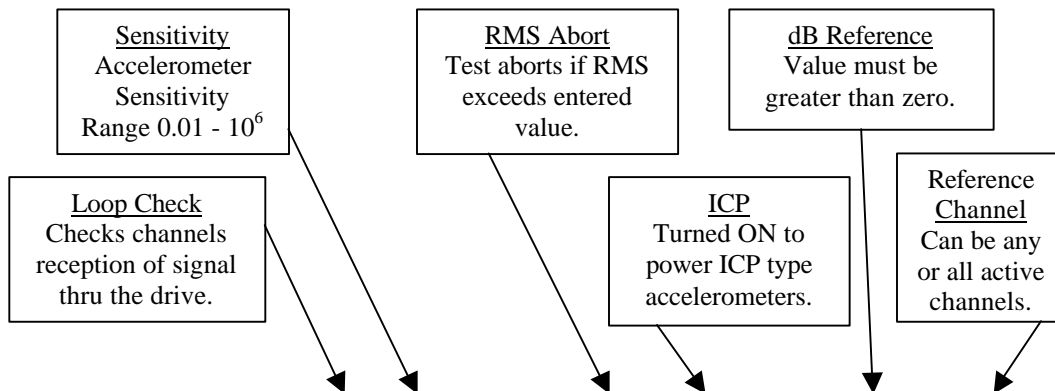
The Channel Definition window allows setup, recall, and storage of Puma input channel settings. There can be 4, 10, 16 or 32 channels available for input. The **Channel Definition** Window columns are defined below.

Name

Up to 20 characters can be used to designate a unique name for the channels being used.

Serial

Up to 20 characters can be used to designate an accelerometer serial number for the channels being used.



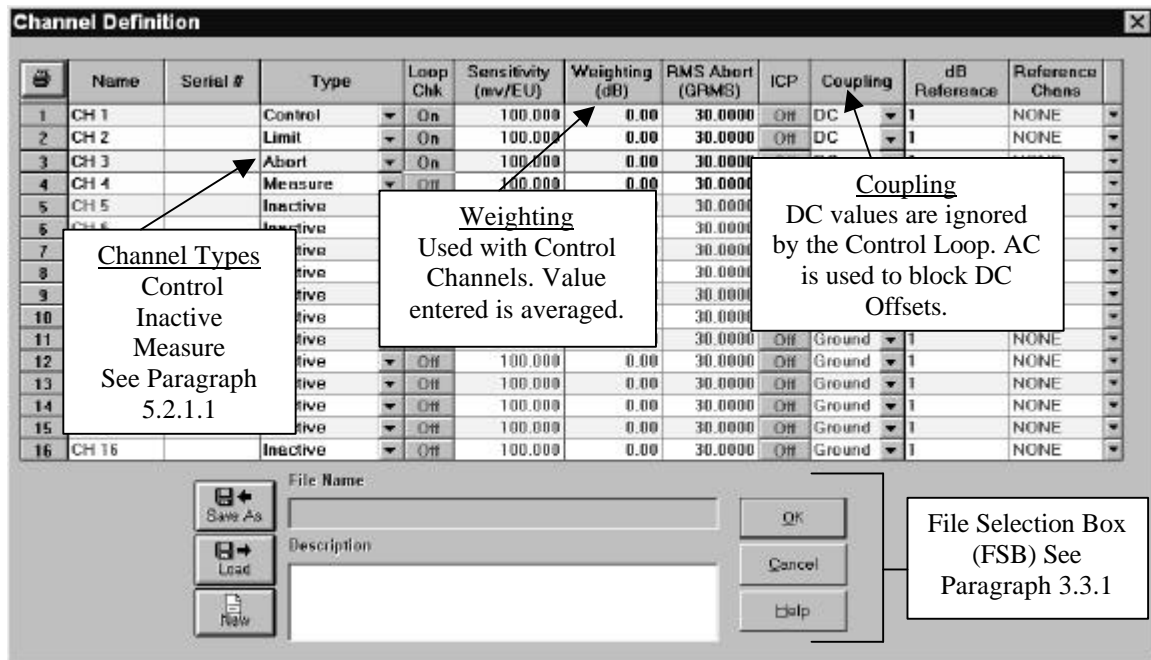


Figure 5-2. Channel Definition Window [Change graphic](#)

Type

Select from three channel types:

- ❑ Inactive – Channel is off and no data is acquired.
- ❑ Control – Channel defined at a control point on the device under test (DUT). There may be multiple control channels, but a minimum of one is required. It is the default.
- ❑ Measure – An active channel used to measure data at other points on the DUT. It is not used to modify the drive. Loop check is optional.

Loop Check

The **Loop Chk** is used to check the channel's reception of the signal being sent through the drive. It can be either **On** or **Off**. When ON, an open channel "Safety" check is performed before the test is run.

Sensitivity mv/g

Accelerometer sensitivity is entered in milli-volts per g. Range is 0.01 to 1,000,000.

Weighting (dB)

Weighting is used in multi-channel average control (more than one control channel) to weight one channel vs. another. If several control channels are used and the highest is 3 while the lowest is 1, there is a 3:1 ratio throughout the channels.

RMS Abort (GRMS)

This safety parameter provides an abort of the test if the level on that channel exceeds the RMS Abort level.

ICP

The ICPfunction can either be **On** or **Off**. It provides a constant DC current source to power ICP type accelerometers. AC coupling must be on to use this feature.

Coupling

Input channel coupling:

- ☐ AC Coupling – It is used to block the DC component of the signal.
- ☐ DC Coupling – It is used to pass the DC component of the signal.
- ☐ Ground Coupling – It grounds the input channel. This is used when the channel is inactive.

dB Reference

This is the level that is used in displaying data from this channel on a dB scale, $\text{dB} = 20 \log (\text{level}/\text{level}_{\text{ref}})$.

Reference Chans

The user may select which channels may be used as reference channels when this channel is used as the response channel in a frequency response function (complex). If NONE is selected, only transmissibility (real) may be displayed when this channel is used as the response.

5.2.2 Controls

The **CONTROLS** Menu option displays the **Test Settings** Window. This window has six tabs. They are:

- ☐ Acquisition
- ☐ Control Setup
- ☐ Test File Setup
- ☐ Data Storage
- ☐ Database
- ☐ Print Automation

At the bottom of each tab are the four standard Windows Command Buttons.

- ☐ OK
- ☐ Cancel
- ☐ Apply
- ☐ Help

After the test starts only the *Cancel* and *Help* buttons are available. Test parameters cannot be changed. Please refer to the Windows documentation for information about these buttons.

5.2.2.1 Test Settings

The six **Test Settings** Window Tabs are described below.

Acquisition

The **Acquisition** Tab (Figure 5-3) sets the sampling and averaging parameters for data acquisition.

❑ Max Frequency (Hz)

Select the data acquisition maximum frequency: 50, 100,200,500, 2K, 5K, 10K and 20K. This value must be greater than or equal to the control maximum frequency. [Set Where?](#)

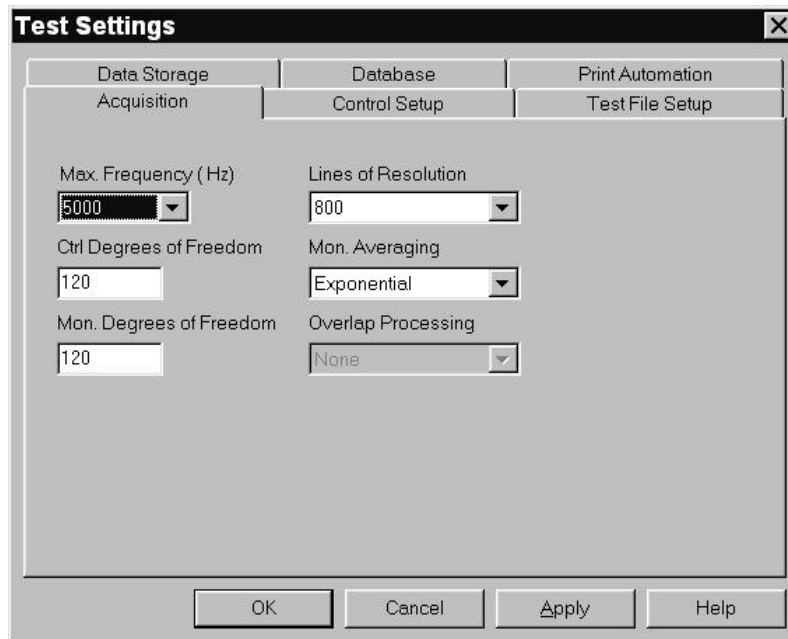


Figure 5-3. Acquisition Tab of TestSettings Window

❑ Lines of Resolution

Select the number of spectral lines within the Max Frequency: 100, 200, 400, 800, (1600 & 3200 optional). The frequency "distance" between each line is known as the Delta F ($\text{Max Freq.} \div \text{LOR} = F$). A high number of lines of resolution in a test yield greater accuracy, however speed is compromised.

❑ Control Degrees of Freedom

This is the statistical averaging parameter for the control PSD calculation. See [Chapter X](#) for more information on DOF.

❑ Mon Averaging

Select the type of averaging for monitor and measurement channels.

Exponential sets a continuous exponential averaging as is done for the control channel. *Linear* specifies linear averaging for a fixed number of frames before averaging is halted.

❑ **Mon Degrees of Freedom**

This sets the discount exponent for exponential averaging or the number of frames for linear averaging (number of frames = DOF/2).

❑ **Overlap Processing**

Allows user to initiate overlap processing. This is an analysis format that uses a mixture of old data and a portion of the new data signal on a segmented basis.

Control Setup

The **Control Setup** Tab (Figure 5-4) has five toggle button boxes. The boxes and their buttons are described below.

❑ **Strategy** – Allows user to assign the control strategy that can be applied to multi-channel control averaging:

Average – The arithmetic average of the control channels at each spectral line.

This is the default.

Minimum – The minimum value of the control channels at each spectral line.

Maximum – The maximum value of the control channels at each spectral line

❑ **Mode** - Allows the user to define how the test starts.

Manual – The user may make modifications to the test while it is running.

Automatic – The user may only make modifications to the test while it is running if Manual is first selected.

Auto Only – No modifications may be made to the test while running.

❑ **Stored Drive**

This allows the user to speed up equalization for repetitive tests by loading a compensated drive signal from a previous test. This box can be set to *Yes*, *No* or *Verify*. Selecting *Yes* would use a pre-stored drive signal at the start of the test. Selecting *No* means the test will start normally with a scaled drive signal and the frequency content of the reference profile. Selecting *Verify* will result in the user being prompted whether to abort the test, use the pre-stored drive, or start the test normally.

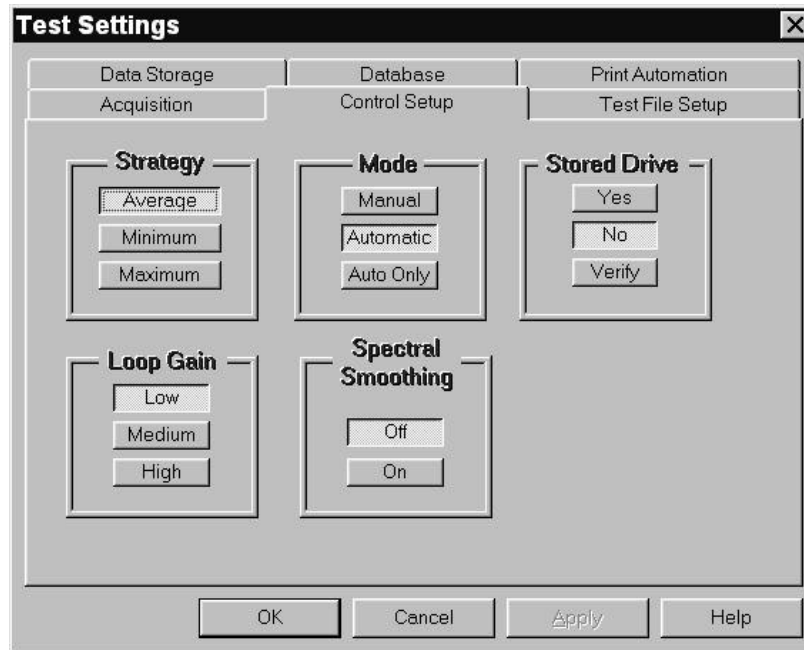


Figure 5-4. Control Setup Tab of Test Settings Window

□ Loop Gain

This is the loop gain expected through the amplifier, shaker and transducer system. This setting is used to optimize control dynamic range. This box can be set to *Low*, *Medium* or *High*. The *Low* setting tends to decrease the oscillations, but makes the control respond slower to step changes in GRMS changes. *Medium* is the standard while the *High* setting is about 2 X the standard feedback factor. The loop gain controls the feedback factor, which in turn controls the level scaling, based on a ratio of the control to reference GRMS's. This allows the system to respond more quickly to dB gain changes per loop rather than relying on simple spectral line feedback. There is a range of approximately 5:1 between *Low* and *High*. This factor helps control the "hunting" in control spectral line levels that is sometimes observed.

□ Spectral Smoothing

This box can only be set to *Off* or *On*. Smoothing will remove the noise from the signal by the use of a filtering process. Similar to the loop gain, the user can control how the system control loop will respond to very small deviations in the control to reference GRMS ratio. If the ratio is small (like less than 1 dB), then the control loop will optionally ignore trying to compensate for these changes using attenuator (like a dB level shift). Instead, the normal control loop spectral line feedback is used. In cases of larger shifts (e.g. > 1 dB), then the attenuator will be used to help shift the drive output. The amount of shift is basically controlled by the loop gain. In any case, where the shift is > 1 dB, the attenuator will still be utilized irrespective of the noise filtering setting.

Test File Setup

The **Test File Setup** Tab (Figure 5-5) shows the currently loaded setup parameters files. The boxes from top to bottom are:

- | | |
|----------------|-----------------|
| ○ Test File | ○ Schedule File |
| ○ Channel File | ○ Sequence File |
| ○ Profile File | ○ Test File |
| | Description |

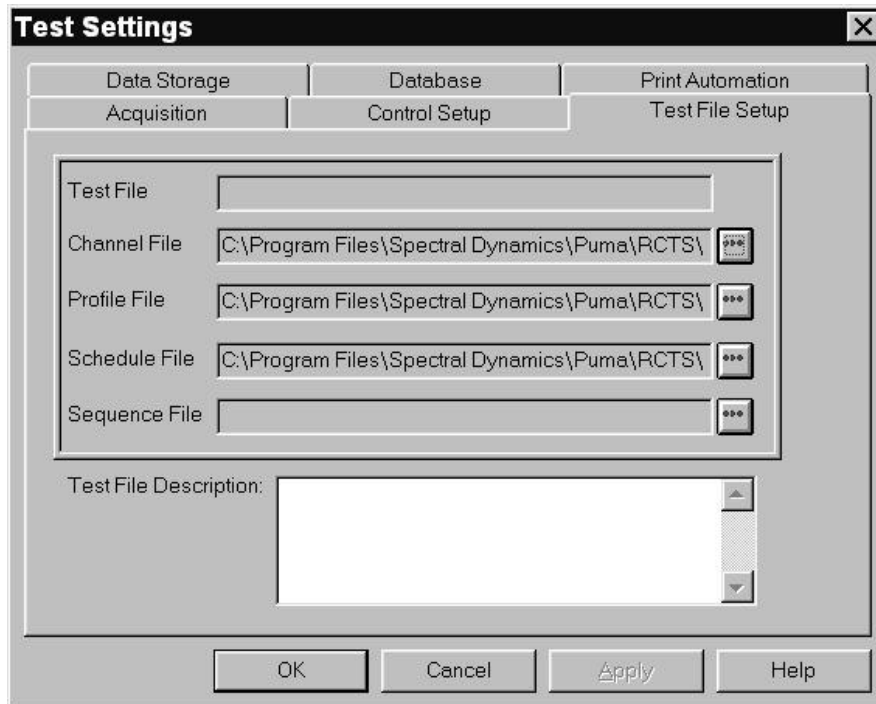


Figure 5-5. Test File Tab of Test Settings Window

The user may either define each file through the corresponding file's dialog box or load the file directly from the **Test Settings** Dialog Box by using the browse buttons.

Data Storage

The **Data Storage** Tab (Figure 5-6) is used to select data storage options.

- **File Name Toggle Button Box – Defines the file where data will be stored.**

The toggle buttons are: *Auto Generate*, *Query* and *Default*.

Auto Generate - Creates a unique file name based on the type of test, date and time that the test started.

Query - Prompts user for a file name after starting test.

Default – All test data is saved in a default file named *Sine on*

RandomTestData.sdd. The default file is overwritten each time the test starts.

❑ Check Boxes

Save On Level Change – Saves a frame of data each time the test schedule changes level

Save Every X Second(s) – Saves a frame of data at each predetermined interval. Enter the number of seconds between data saves. If not used carefully file sizes can become quite large.

Save On Alarm – Saves a frame of data each time the system alarms. Used to keep track of when the data trace exceeds the alarm lines on a profile.

Save On External – Saves a frame of data with each pulse from an external source

Note – Any combination of these options may be used. PUMA Sine on Random will always save the last frame of data on <ABORT>, <STOP> or upon normal Test Completion.

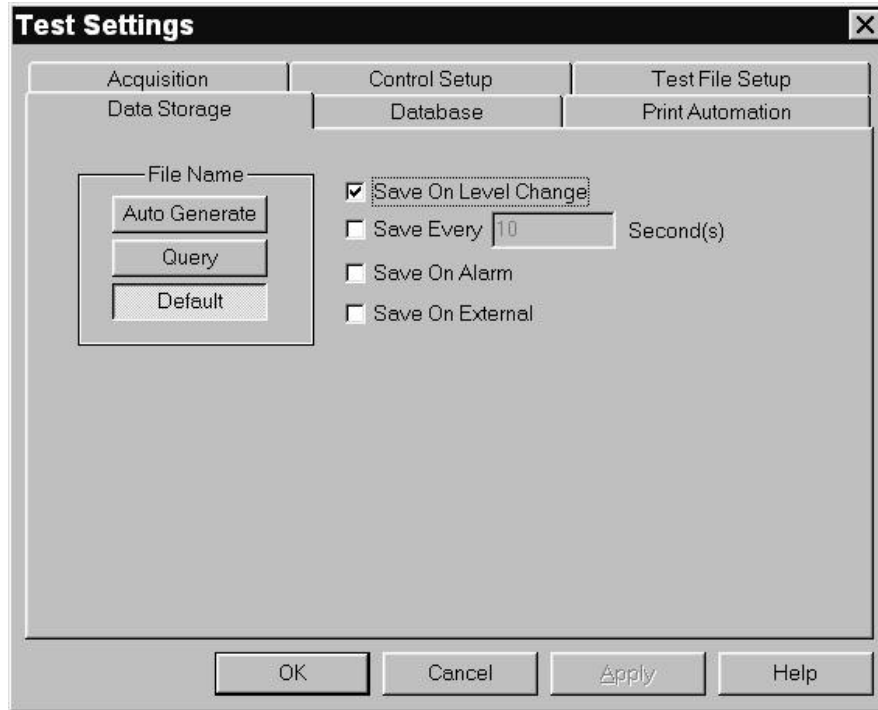


Figure 5-6. Data Storage Tab of Test Settings Window

Database

The **Database** Tab (Figure 5-7) has a check box, three toggle buttons and three drop-down list boxes. They are described below.

When the **Enable Storage** checkbox is checked the **Notice** Dialog Box (Figure 5-8) is activated and the **Select Test** drop-down lists become active.

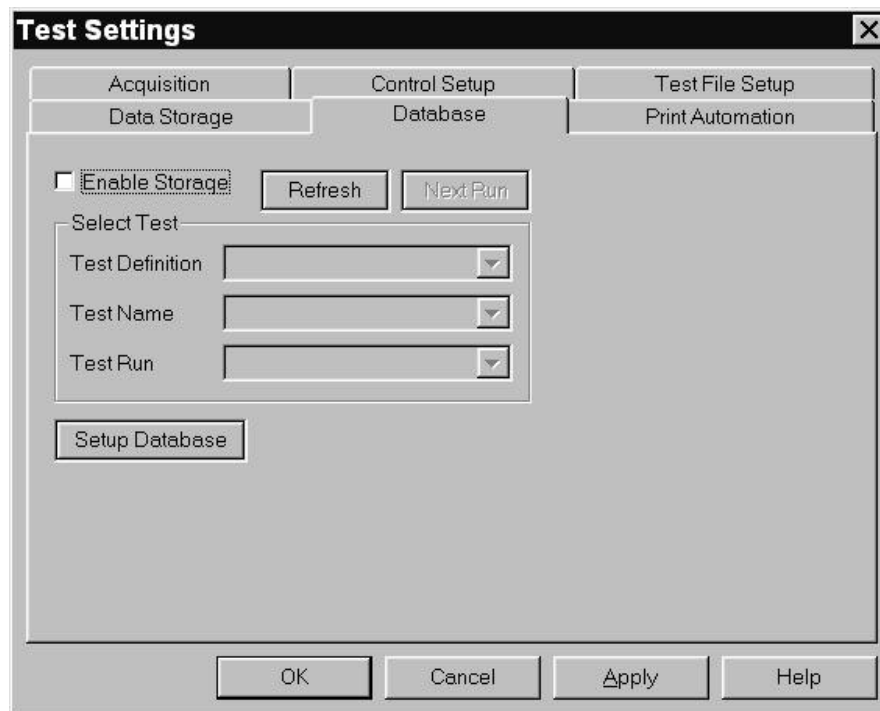


Figure 5-7. Database Tab of Test Settings Window



Figure 5-8. Enable Storage Check Box Notice Dialog

Print Automation

The **Print Automation** Tab (Figure 5-9) is an **optional feature** that allows the user to define a series of print layouts to be automatically printed at the end of each test. Depending on graphics options, each layout can be up to 8 pages.

❑ Command Buttons

The *Add*, *Remove*, *Save* and *Load* buttons are used to build, access or modify the table of print layouts from existing print layouts.

❑ Check Boxes

Enable Printing

The check box will enable /disable automatic printing.

AutoScale

This check box will enable / disable automatic scaling of the X and Y data so it will fit on the graph. It is recommended this option be checked.

❑ Radio Buttons

ALL FRAMES prints each frame of data saved during the test (see Data Storage above).

LAST FRAME prints only the final frame of the test.



Figure 5-9. Print Automation Tab of Test Settings Window

5.2.3 Reference Import

The **REFERENCE IMPORT** Menu Option displays the **Reference Import Screen**. See Figure 5-10.

❑ File Select Box

Clicking on the browser button at the end of the **File Select Box** launches an **Open** Dialog and enables the user to select the file to be used. Once selected, the file name/path appears in the **File Select Box**.

❑ Reference Profile Listing

This lists available records in the file to be imported as the reference.

❑ Profile Range

Enter the minimum and maximum frequencies of the test.

❑ **Abort Line Settings**

Enter the positive and negative abort ranges in dB.

❑ **Alarm Line Settings**

Enter the positive and negative alarm ranges in dB.

❑ **Acquisition Rate**

This is the acquisition rate of the imported reference data as defined on the *Acquisition* Tab of the **Test Settings** Dialog.

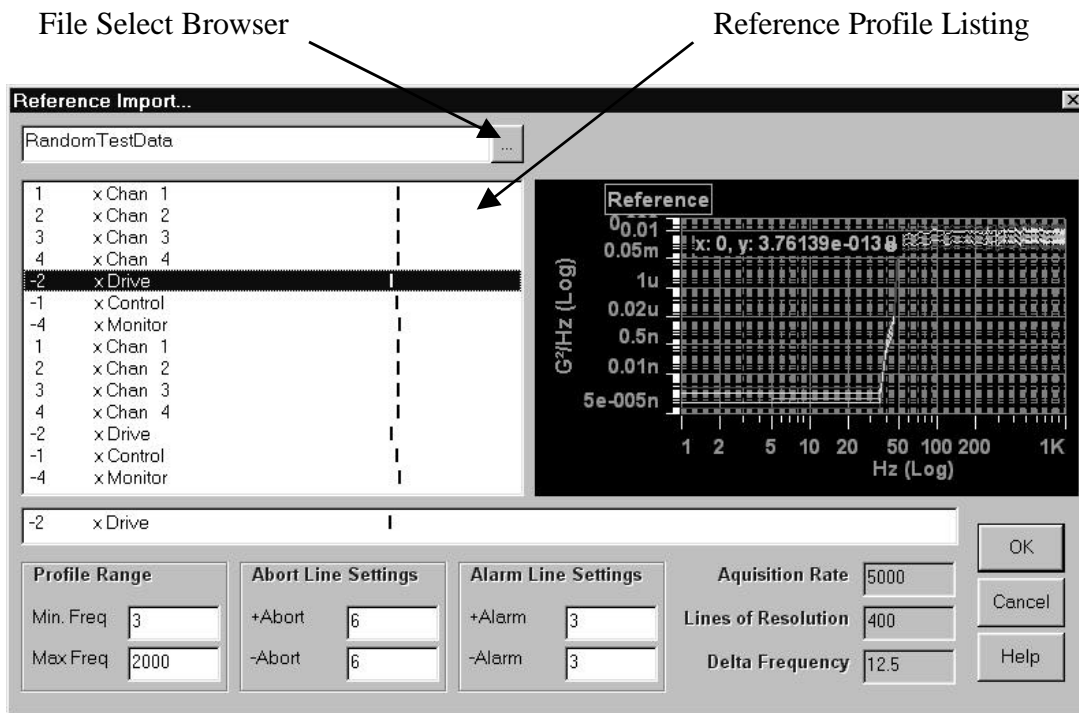


Figure 5-10. Reference Import Window

❑ **Lines of Resolution (LOR)**

This is the number of spectral lines in the imported reference data as defined on the *Acquisition* Tab of the **Test Settings** Dialog.

❑ **Delta Frequency (ΔF)**

This is the frequency spacing of the imported reference data.

❑ **Command Buttons**

<OK>	This button accepts the changes made and closes the dialog box.
<CANCEL>	This button cancels any changes made and closes the dialog box.
<HELP>	This button opens the on-line help option and enables the user to find answers to questions about the system / settings.

5.2.4 Broadband Profiles

The **BROADBAND PROFILES** Menu Option displays the **Profile Settings** Window. See Figure 5-11. There will always be a **Control** tab. Next to the word Control in the tab is the channel number or numbers assigned as control channels in the channel table. This tab sets up the reference profile for the control channels. The Profile Settings Tabs format is outlined below.

5.2.4.1 Profile Settings

Reference profiles are defined in terms of slopes and frequency/amplitude breakpoints. A combination of up to 500 slopes and frequency/amplitude breakpoints may be used to define a profile. Definitions of each parameter is provided below:

Hint: to insert or delete a line in the table, highlight the line by clicking on the line number to the left and use the keyboard insert/delete keys.

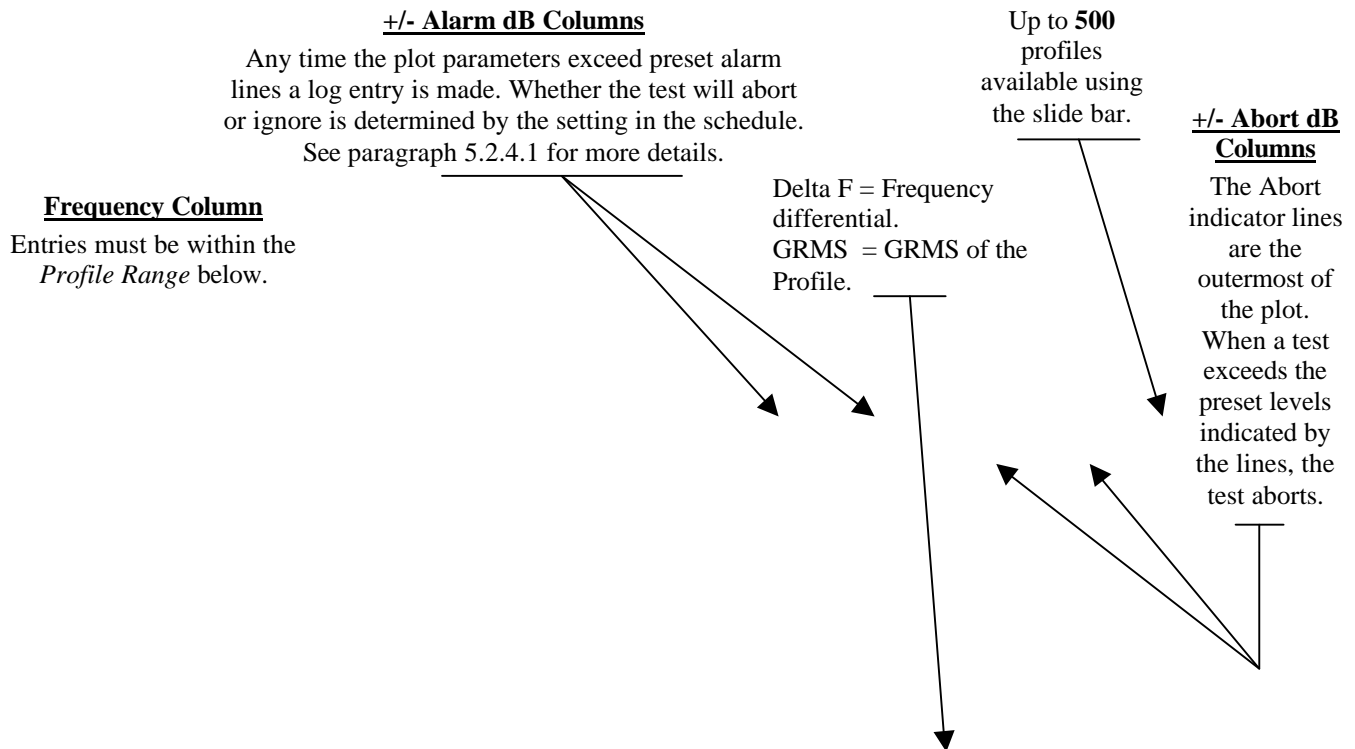
- ☐ **Status**
Toggle on/off breakpoint or slope in the profile table.
- ☐ **Frequency**
Enter the breakpoint frequency in Hz.
- ☐ **G²/Hz**
Enter the amplitude for the breakpoint in G²/Hz.
- ☐ **Slope (dB/oct)**
Enter the slope for a segment in dB/octave.
- ☐ **-Alarm (dB)**
Enter negative alarm tolerance for this breakpoint in dB (negative sign is not necessary).
- ☐ **+Alarm (dB)**
Enter positive alarm tolerance for this breakpoint in dB.

❑ **-Abort (dB)**

Enter negative abort tolerance for this breakpoint in dB (negative sign is not necessary)

❑ **+Abort (dB)**

Enter positive abort tolerance for this breakpoint in dB



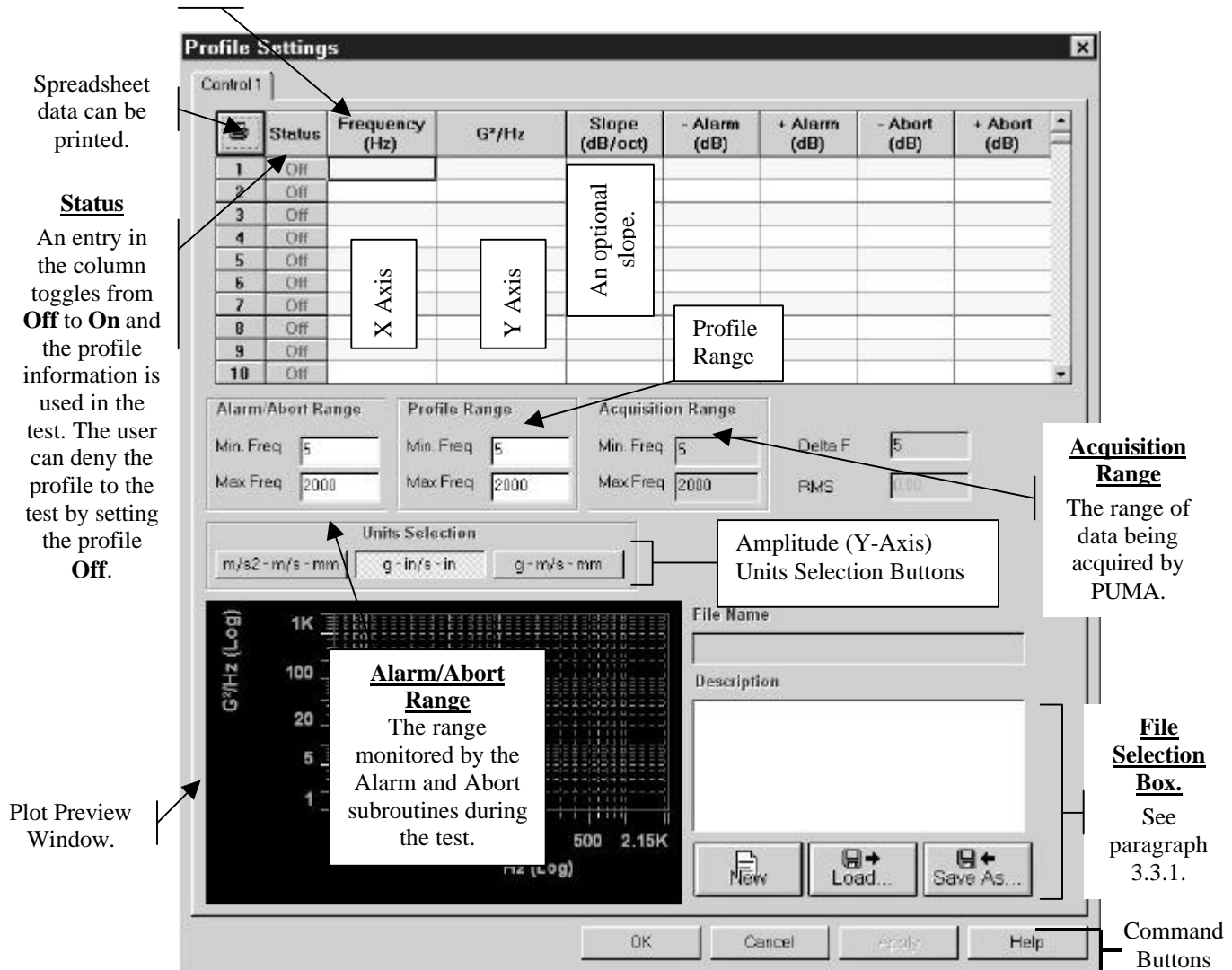


Figure 5-11. Profile Settings Window for Broadband Profiles

❑ **Alarm/Abort Range**

Enter the minimum and maximum frequency range over which tolerances will be checked during the test. Range must be within Acquisition Range minimum and maximum frequency.

❑ **Profile Range**

Enter the minimum and maximum range for the profile.

❑ **Acquisition Range**

Display of Acquisition minimum and maximum frequency defined in the Control Settings.

- ❑ **Delta F**

Display of the frequency spacing of data ($\Delta F = \text{bandwidth} / \# \text{ lines of resolution}$).

- ❑ **GRMS**

Displays total GRMS of the entered profile.

Hint: To rescale the entire reference and maintain profile shape place mouse pointer in the GRMS box and right-click the mouse. A prompt will appear for a “New GRMS.” Enter the new GRMS and click “OK.” The breakpoints will be scaled to achieve the desired level.

5.2.5 Tone Profiles

The **Tone Profiles** (narrowband) are set with the **Tone Profiles** Dialog. See Figure 5-12. This dialog is similar to the **Broadband Profiles** Dialog except for the following:

- ❑ **Sweep Range**

4 Along with the start frequency there are listings of the minimum and maximum ranges for the tone.

- ❑ **Tone Parameters** - The **Tone Parameters** categories are:

5 Sweep Mode - Choose Log or Linear

6 Points Per Sweep - Range is: 200, 400, 800, 1600

7 Tone Smoothing - Choose Off, Automatic, Low, Medium or High

8 Initial Sweep Direction - Choose Up, Down or Stationary

9 Sweep Type - Choose Rate or Timed

10 Sweep Time - User defined for a Timed Sweep Type

11 Sweep Rate (Oct/Min) - User defined as applicable.

- ❑ **Tone Duration**

12 Duration Type - Choose Sweeps, Timed or Unlimited

13 Time - User defined for a Timed Duration Type

14 Sweeps - User defined for a Sweeps Duration Type

- ❑ **Harmonics Command Button** - [What does this do?](#)

Profile Settings

Tone 1 | Tone 2 | Tone 3 | Tone 4 | Tone 5 | Tone 6 | Tone 7 | Tone 8 | Tone 9 | Tone 10

	Status	Frequency (Hz)	Type	G	in/s	in	- Alarm (dB)	+ Alarm (dB)	- Abort (dB)	+ Abort (dB)
1	On	100.000	Displacement	30.6761	18.849556	0.060000	50.0	50.0	55.0	55.0
2	Off									
3	Off									
4	Off									
5	Off									

Acquisition Range: Min. Freq: 5, Max Freq: 2000
 Sweep Range: Min. Freq: 20, Max Freq: 1000, Start Freq: 20
 Alarm-Abort Range: Min. Freq: 20, Max Freq: 1000

Tone Parameters: Sweep Mode: Log, Sweep Type: Rate, Points Per Sweep: 400, Sweep Time: 0000:056:026, Tone Smoothing: Automatic, Sweep Rate (Oct/Min): 0.1, Initial Sweep Direction: Up

Tone Duration: Duration Type: Sweeps, Time: 0005:038:037, Sweeps: 6

A Reference

Units Selection: m/s² - m/s - mm, g - in/s - in, g - m/s - mm

File Name: C:\Program Files\Spectral Dynamics\Puma\Rct\091301T
 Description:

New Load Save As

OK Cancel Apply Help

Figure 5-12. Profile Settings Window for Tone Profiles

5.2.6 Schedules

The **SCHEDULES** Menu Option displays the **Schedule Setup** Window. It has two tabs labeled **Level Schedule** and **Test Schedule**. Both are discussed below. During setup if no schedule is defined the default will be applied automatically. It is approximately 45 minutes.

5.2.6.1 Level Schedule

The **Level Schedule** Tab (Figure 5-13) is used to set the duration of the test. This duration can be specified as a single level or multiple levels. The Level Schedule table parameters are:

- **Status**

Toggle on/off level segment in the Level Schedule table.

Hint: To insert or delete a line in the table, highlight the line by clicking on the line number to the left and use the keyboard insert/delete keys.

❑ **Level (dB)**

Enter the test level in dB relative to full test level (from -80 to 0 dB).

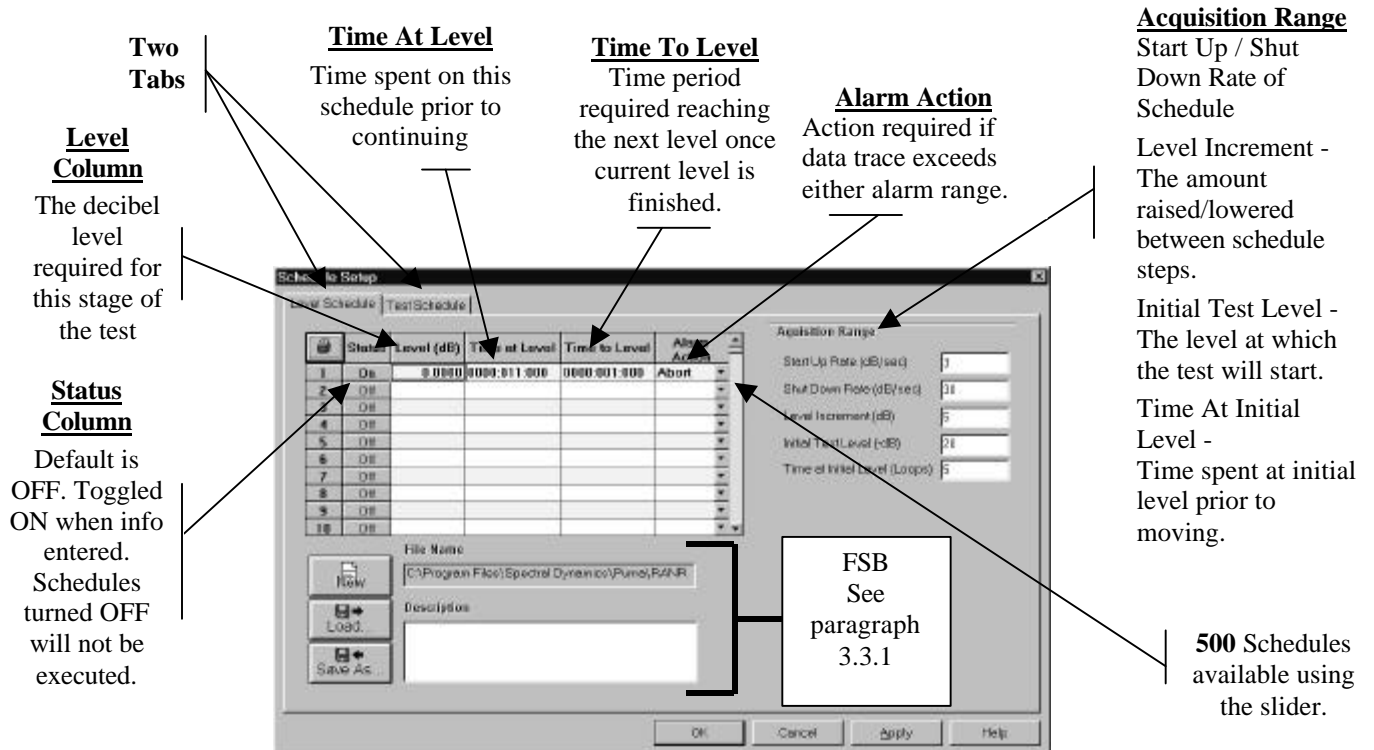


Figure 5-13. Level Schedule Tab of Schedule Setup Window

❑ **Time at Level**

Enter the time to remain at this level before continuing to the next.

❑ **Time to Level**

Enter the time to reach the next level once this level has completed.

❑ **Alarm Action**

Select *Abort* or *Ignore*. If the data trace exceeds the alarm lines at a predetermined level the test can be aborted.

❑ **Acquisition Range**

15 Startup Rate (dB/sec)

Enter the rate in dB/sec to proceed from the initial test level to full level.

16 Shutdown Rate (dB/sec)

Enter the rate, in dB/sec, at which to shutdown after an abort or completion of the test.

17 Level Increment (dB

Test level step increment.

18 Initial Test Level (-dB)

Enter the initial level relative to full test level at which to equalize and begin checking alarm and abort tolerances.

19 Time at Initial Level (Loops)

Enter the number of control loops to complete before continuing to full level in the Automatic mode. The actual time will depend on test bandwidth and resolution.

5.2.6.2 Test Schedule

The **Test Schedule** Tab (Figure 5-14) is used to schedule a sequence of test profiles and level schedules. For Test Scheduling all profiles must use the same acquisition parameters. For scheduling of tests with different acquisition parameters or different types of test (e.g. sine) you must use Mission Simulation. After the test starts the **Test Scheduling** Dialog will appear. Its table is the same as the **Test Schedule** Tab's table except for the **Current Cycle** column. A box around the entry in that column indicates the active cycle.

Profile Column

A file name is entered to enable the user to use multiple profiles.

LH Browse
Buttons link
the user to
previously
stored
profiles.

Level Schedule

The schedule can
hold multiple
schedules.

RH Browse
Buttons
link the
user to
previously
stored
schedules.

Cycles Column

If this row of data holds
multiple schedules, list
the number of times to
repeat the test before
continuing.

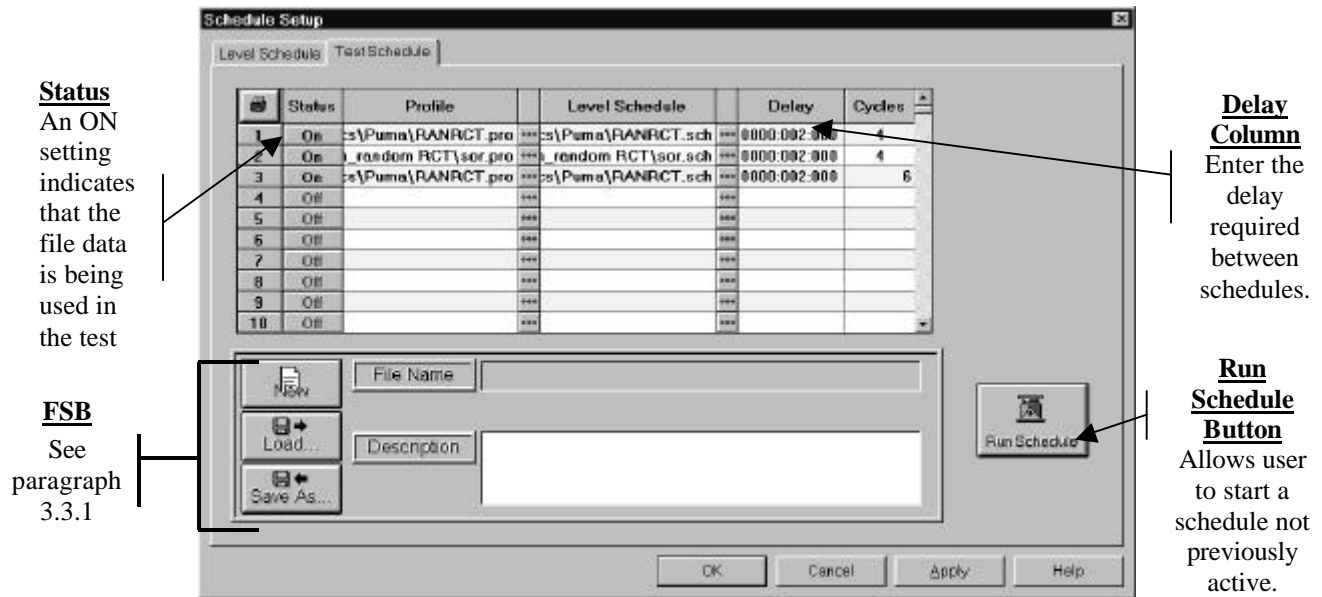


Figure 5-14. Test Schedule Tab of Schedule Setup Window

The Test Schedule table parameters are:

❑ **Status**

Toggle on/off level segment in the Test Schedule table.

Hint: to insert or delete a line in the table, highlight the line by clicking on the line number to the left and use the keyboard insert/delete keys.

❑ **Profile**

Select the test profile from previously stored profiles using the browser button on the right.

❑ **Level Schedule**

Select the level schedule for this test profile from previously stored level schedule files using the browser button on the right.

❑ **Delay**

Enter the delay in *hours:minutes:seconds* before executing this test in the schedule.

❑ **Cycles**

Enter the number of times to repeat this profile and schedule before continuing on the next profile.

❑ **Run Schedule Button**

Click on the run schedule button to execute the loaded Test Schedule.

❑ **Command Buttons**

Below the tabular data display is a **File Selection Box** with a *<RUN SCHEDULE>* Command Button to the right of it.

5.2.7 Limits

The **LIMITS** Menu Option displays the **Limit Settings** Window. It has two tabs labeled *Safety Limits* and *Shaker Limits*. Both are discussed below.

5.2.7.1 Safety Limits Tab

The *Safety Limits* Tab (Figure 5-15) is used to set the parameters for safety checks. The checks are divided into 6 areas:

- ❑ **Alarm Lines**

Specify the portion of the spectral lines that must exceed the alarm tolerances to trigger an alarm. This can be specified in either an absolute number of spectral lines or in a percent of the total spectral lines.

- ❑ **Abort Lines**

Specify the portion of the spectral lines that must exceed the abort tolerances to trigger an abort. This can be specified in either an absolute number of spectral lines or in a percent of the total spectral lines.

- ❑ **Sigma Clipping**

Enter the Sigma Clipping level. Sigma Clipping limits the ratio of peak to RMS allowed in the drive signal. Low values of Sigma Clipping can significantly clip the drive signal and result in a loss of control dynamic range.

- ❑ **GRMS**

Specify the GRMS levels for the control signal at which an alarm or an abort will be triggered. This may be specified in either dB above the Reference Profile or in Absolute GRMS.

- ❑ **Loop Check**

Specify the parameters to be used in the pre-test loop check.

- ❑ **Max Noise (mV RMS)**

Enter the maximum acceptable noise level measured on control channels prior to output of a drive signal.

Limit Settings

Safety Limits | Shaker Limits

Alarm Lines

Number: 10
Percent: 10

Abort Lines

Number: 10
Percent: 10

Sigma Clipping

3.8

GRMS

dB: Absolute
Alarm: 3
Abort: 6

Loop Check

Max Noise (mV RMS): 50
Max Drive (mV RMS): 100
☒ Initial Threshold Test

CSL Sensitivity

Off
Low
Standard

OK Cancel Apply Help

Figure 5-15. Safety Limits Tab of Limit Settings Window

❑ **Max Drive (mV RMS)**

Enter the maximum drive output level during loop check. If the control signal is not detected 3 dB above the measured ambient noise at this drive level the system is considered to be open loop and the test will not start.

❑ **CSL Sensitivity**

Control Signal Loss Sensitivity Settings.

Standard

This method provides the safest control signal loss detection mode and will usually detect cases where an accelerometer has fallen off a test specimen, but remains on the test fixture (bouncing about).

- 1) Measure the ambient noise (in RMS volts) on each control channel with the drive off.
- 2) Increase the drive until all control channels exceed the measured ambient noise by 6dB.
- 3) Measure the RMS of each control channel at the current drive level and store the RMS level.

If, at any time during a test, any one of the control channel's RMS values goes more than 3dB below the above stored RMS level, the test is aborted.

CAUTION

The **Low** selection should only be used in the **Manual** Mode and **never** left unattended.

Low

This method is good for large structures that may have large differences in the gains of the control channels.

1. Measure the ambient noise on each control channel (with drive off) and set the control signal loss threshold to 3dB above this level.
2. If, at any time during a test, any one of the control channel's RMS values goes below the above stored RMS level, the test is aborted.

WARNING

The **OFF** selection can cause severe over-test if the control signal is lost due to broken cables or malfunctioning equipment and the drive signal is increased in an attempt to compensate for the low control level.

CAUTION

The **OFF** selection should only be used in the **Manual** Mode and **never** left unattended.

Off

It may be useful in noisy environments for cases where control signal loss aborts have occurred and the equipment is known to be working properly.

1. Disable the control signal loss after the loop

5.2.7.2 Shaker Limits Tab

The *Shaker Limits* Tab (Figure 5-16) of the Limit Settings Window allows safety limits to be entered for shaker tables. Tables may be saved and recalled for laboratories with multiple shaker systems. If a test setup will exceed the limits in this table the system will provide a warning and prevent the test from being run.

Shaker limit parameters are:

☐ **Acceleration**

Enter the maximum acceleration (+g, -g) for the shaker system.

☐ **Velocity**

Enter the maximum velocity (+in/s, -in/s) for the shaker system.

☐ **Displacement**

Enter the maximum displacement (+in, -in) for the shaker system.

❑ **Voltage**

Enter the maximum input voltage (+V, -V) of the shaker amplifier.

❑ **Symmetrical Limits**

Check this box to enter peak value limits only once (in positive value boxes) when symmetrical. The opposite limit is assumed to be the negative of the entered value. This makes table entries easier. In either symmetric or non-symmetric limit tests, the limit value is still assumed to be zero to peak.

The screenshot shows a dialog box titled "Limit Settings" with a close button (X) in the top right corner. It has two tabs: "Safety Limits" and "Shaker Limits", with "Shaker Limits" currently selected. The dialog contains several input fields for setting limits: Acceleration (g) with a value of 50, Velocity (in/sec) with a value of 50, Displacement (in) with a value of 1, and Voltage (V) with a value of 12. Each of these has a corresponding negative value field to its right, all containing the same positive value. Below these fields is a checkbox labeled "Symetric Limits" which is checked. At the bottom left, there are three buttons: "Save As" (with a floppy disk icon), "Load" (with a floppy disk icon and an arrow), and "New" (with a document icon). To the right of these buttons are two text input fields: "File Name" and "Description". At the very bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

Figure 5-16. Shaker Limits Tab of Limit Settings Window

5.2.8 Remote Control Interface

The **REMOTE CONTROL INTERFACE** Menu Option displays the **Remote Control Interface** Window. See Figure 5-17. This window allows the user to specify actions to occur when TTL status lines on the Remote Communications Interface go high or low. The action options are:

- ☐ Abort – abort the running test
- ☐ Start – Start the currently loaded test
- ☐ Stop – Stop the running test
- ☐ Resume – Resume the stopped or aborted test
- ☐ Load Schedule – Load a stored test schedule
- ☐ Load Profile – Load a stored test profile
- ☐ Full Level – Bring running test to full level
- ☐ Load Test – Load a stored test setup

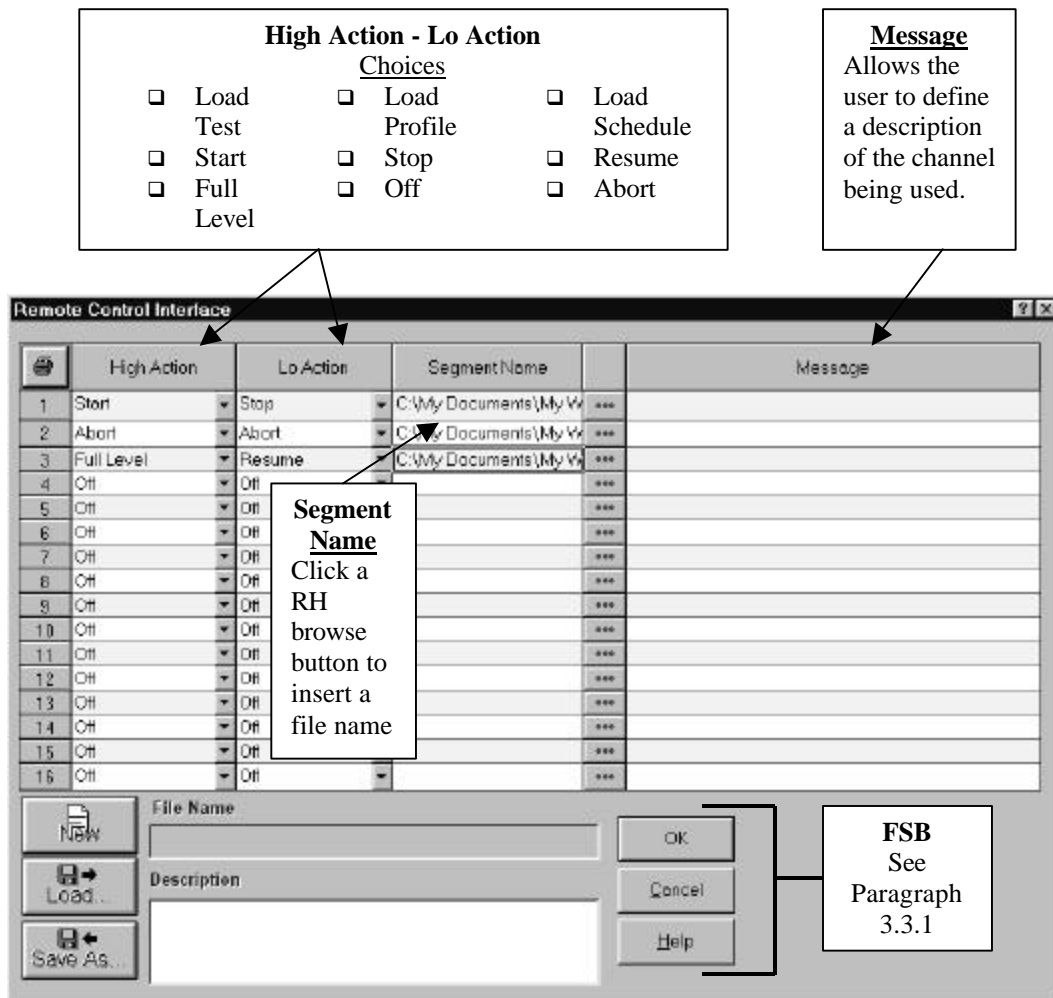


Figure 5-17. Remote Control Interface Window

Remote Control Interface setup parameters:

- ☐ **Input Line Number**
Input status line channels 1 thru 16
- ☐ **High Action**

Each channel has a default entry (Off) and a pull-down menu with eight action menu choices.

❑ **Lo Action**

Same as the High Action.

❑ **Segment Name**

Each row has a Browser Button that displays the {Open} (File) Dialog Box to allow user to find the desired file.

❑ **Message Column**

Enter text identifying Remote Communications Interface Line.

5.2.9 Security

The **SECURITY** Menu Option displays the **Update Security File** Window. See Figure 5-18. **This is a purchase option.** This window is used to update the security file by either adding or deleting employees names, their privileges or both. User privileges are added by highlighting the privilege in the **Privilege Table**.

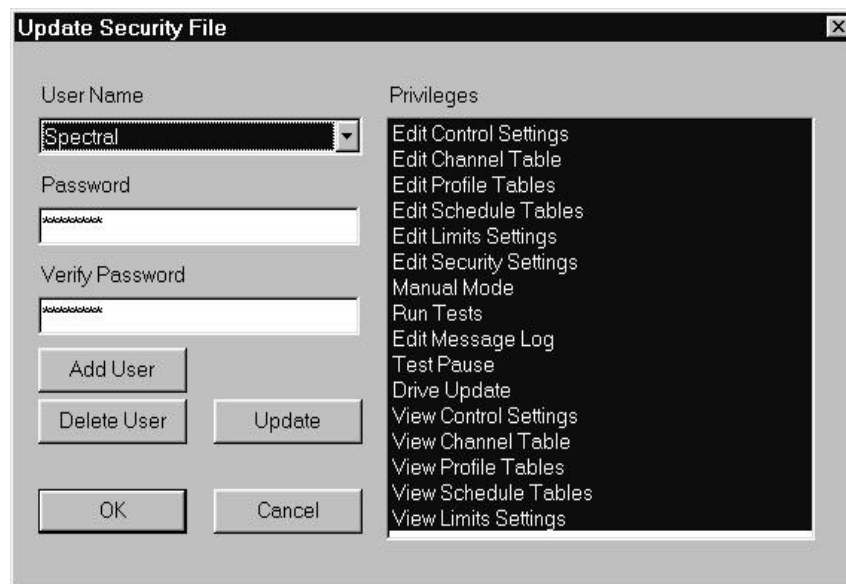


Figure 5-18. Update Security File Window

Chapter 6 - View Menu

6.1 Introduction

When **VIEW** is selected from the Menu Bar, the image shown in Figure 6-1 will display. Note that selections have been made. The checkmarks indicate items that will be seen either in a window or on the desktop during the test. The number of channels being monitored depends on the package purchased. There can be 4, 10, 16 or 32 channels available.

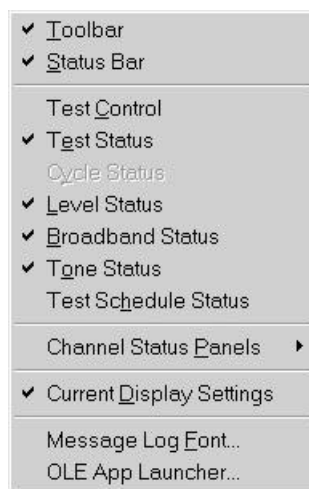


Figure 6-1. View Menu

6.2 View Submenus

Each of the remaining **VIEW** submenus is described next.

6.2.1 Toolbar And Status Bar

When the **TOOLBAR** and/or **STATUS BAR** options are selected, the Toolbar buttons and Status Bar information will display. See Figure 6-2.

6.2.1.1 Toolbar

The **TOOLBAR** buttons are shortcuts for various menu items. The first six, and the last three, are standard Windows Toolbar buttons. These are described in your Windows documentation. Information for the other buttons, **CHANNEL SETUP**, **BROADBAND PROPERTIES**, **TONE PROPERTIES**, and **SETUP SCHEDULE**, can be found later in this chapter.

6.2.1.2 Status Bar

The Status bar gives information about various activities currently running on the system. A message displays whenever the cursor touches a shortcut icon. It also has three boxes that act as text boxes to indicate certain functions are available.

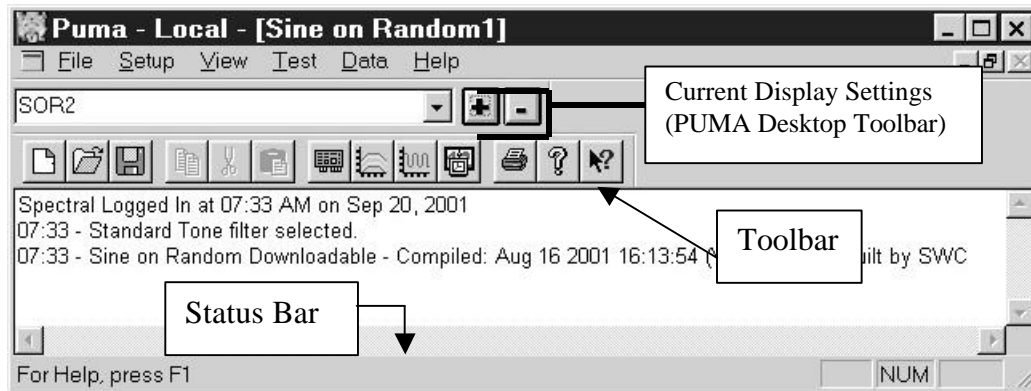


Figure 6-2. Toolbars and Status Bar

6.2.2 Test Control

When **TEST CONTROL** is selected from the **VIEW** menu, the Test Control images shown in Figures 6-3 and 6-4 will display.

6.2.2.1 Test Control Common Components

The seven common button controls of the Test Control are described below.

□ Start / Stop

Select the <Start> button to begin the currently loaded test. The test is running as long as the button is depressed and reads **Stop**. When the test is stopped the button is raised and reads **Start**.

□ Restart

Select the <Restart> button to restart the test after a test has been stopped. The test continues from the point at which it was aborted.

□ Pause Continue

Select the <Pause> button to pause the currently loaded test. The button label will change to <Continue>.

□ Manual

Select the <Manual> button to run the test in the manual mode. The **TEST CONTROL COMPONENT TAB** displays to enable control of the sweep direction and rate.

□ Reset Avg.

Select the <Reset Avg.> button to reset the control-averaging algorithm.

□ Save

Select the <Save> button to manually save the current frame of data to a file.

□ Abort

Select the <Abort> button to manually abort the currently running test. The user may also hit the orange Abort Test <F12> key on the keyboard. [An optional External Abort Actuator Button is available from Spectral Dynamics. Actuating this option completely stops the test and the user is queried to save the test results or not.](#) This button is colored white when the test is not running and colored red during the test.

6.2.2.2 Broadband Tab

The control components of the **TEST CONTROL BROADBAND TAB** are described below. There are three buttons and a slider used to control the test.

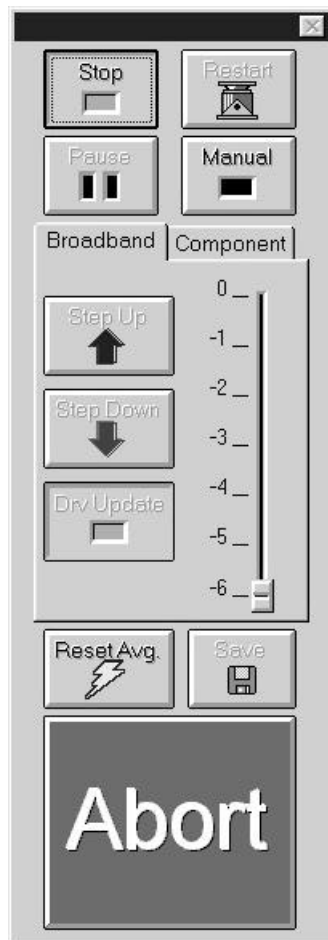


Figure 6-3. Test Control
In Auto Mode

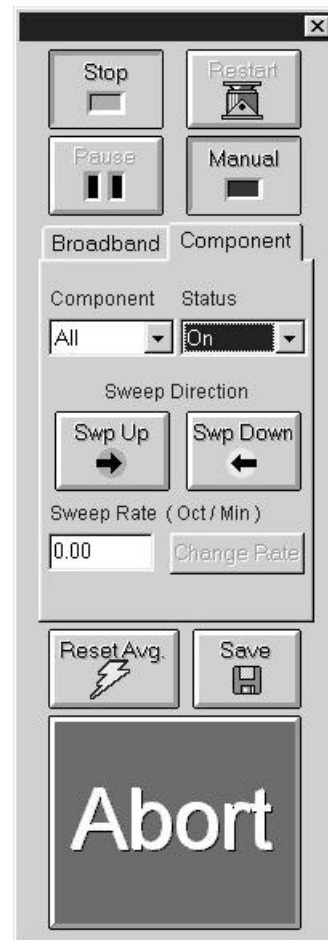


Figure 6-4. Test Control
In Manual Mode

❑ **Step Up**

Select the <Step Up> button to increase the test one schedule level (as defined in Test Schedule Dialog).

❑ **Step Down**

Select the <Step Down> button to decrease the test one schedule level (as defined in Test Schedule Dialog).

Note: A schedule must be loaded to have the <Step Up> and <Step Down> buttons respond.

❑ **Drv Update**

Click the <Drv Update> button to toggle (on/off) the updating of the drive signal. When ON it appears depressed and the window is highlighted. On is commonly used for closed loop control. Turning it OFF effectively replays the same drive signal continuously and the Alarm/Abort limits are inactive. **Use with caution.**

❑ **Slider**

The slider allows the user to change the level of the test more than just one increment, as does the step up/down buttons.

6.2.2.3 Component Tab

The three buttons, two drop down lists and single text box of the **TEST CONTROL COMPONENT TAB** are described below.

❑ **Component Drop-Down List**

The choices are: [NEED INFO](#)

❑ **Status Drop-Down List**

The choices are: : [NEED INFO](#)

❑ **Sweep Direction Buttons**

The <Swp UP> and <Swp Down> buttons change the direction of the sweep.

❑ **Sweep Rate (Oct / Min)**

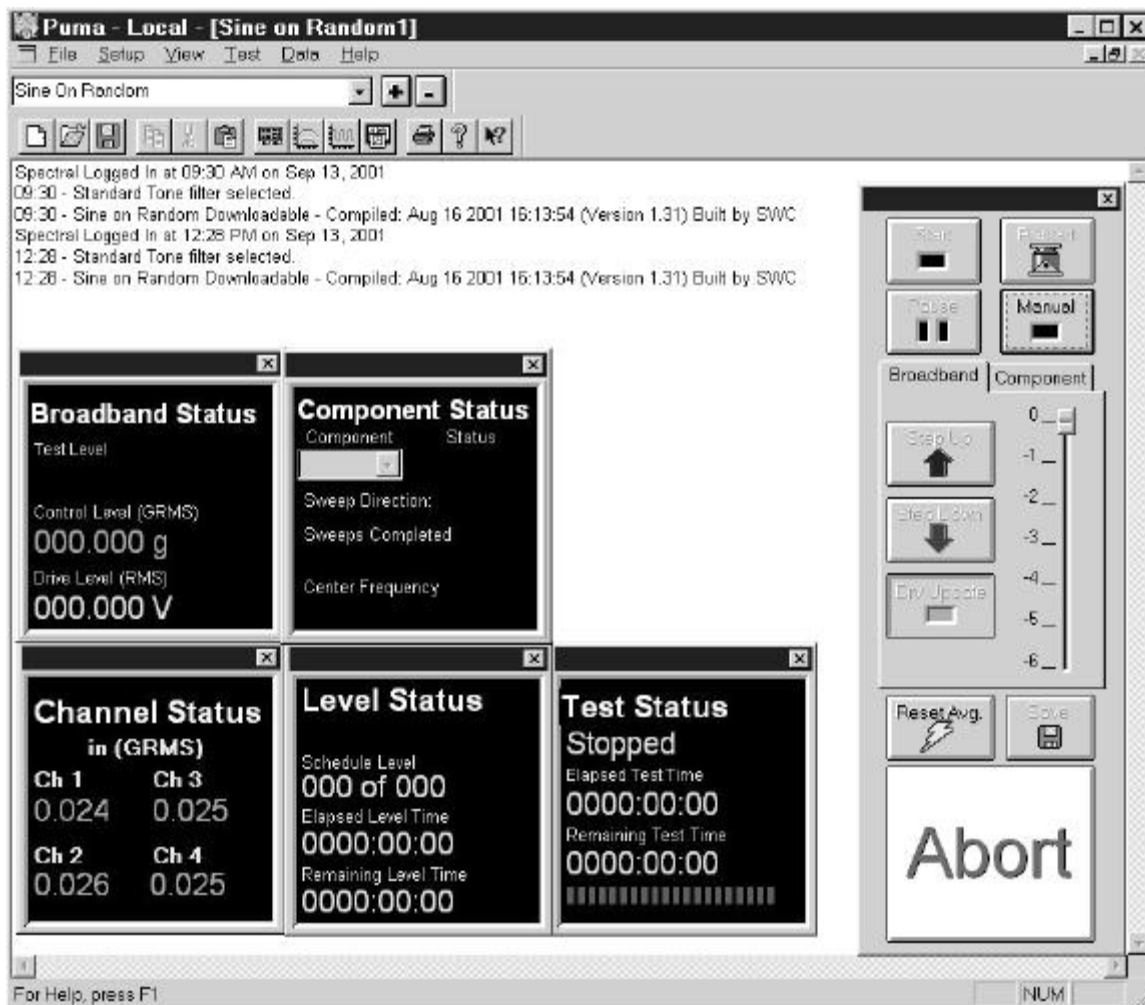
The text box reflects the value [chosen with the <Change Rate> button.](#)

6.2.3 Status Panel Options

When any of the **BROADBAND STATUS**, **CHANNEL STATUS**, **CYCLE STATUS**, **TONE STATUS**, **LEVEL STATUS**, **TEST STATUS** or **TEST SCHEDULE STATUS** options are selected, the Status Panels shown in Figures 6-5 or 6-6 through 6-11 will display.

6.2.3.1 Test Status

When **TEST STATUS** is selected from the **VIEW** menu, the Test Status panel shown in Figures 6-5 and 6-6 will display. The Test Status Panels give information about the currently loaded test.



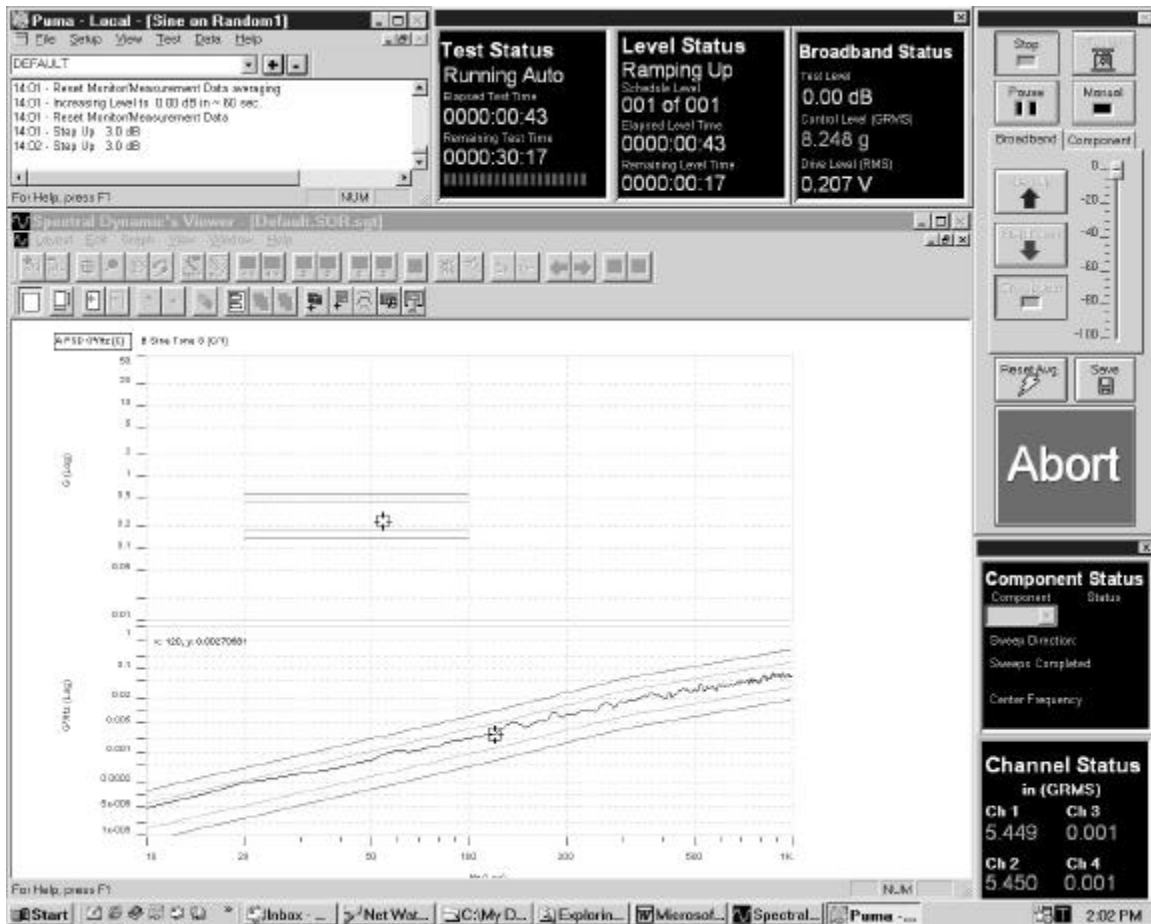


Figure 6-5. Status Panels

6.2.3.2 Cycle Status

Need Graphic and info. See Figures 6-5 and 6-7.

6.2.3.3 Level Status

When **LEVEL STATUS** is selected from the **VIEW** menu, the status panel shown in Figures 6-5 and 6-8 will display. This panel gives information about the level of the currently loaded test.

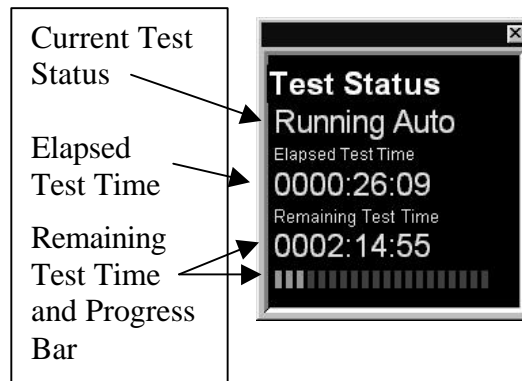
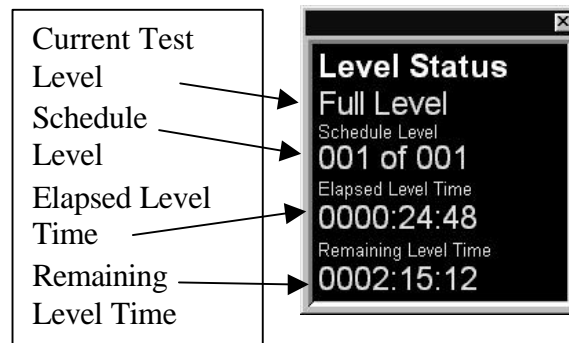


Figure 6-6. Test Status Panel**Figure 6-7. Cycle Status Panel****Figure 6-8. Test Level Status Panel**

6.2.3.4 Tone Status

When the **TONE STATUS** option from the **VIEW** menu is selected, the **Component Status** panel shown in Figures 6-5 and 6-9 will display. This panel gives information about the level of the currently loaded test.

6.2.3.5 Broadband Status

Clicking on the **BROADBAND STATUS** Menu Option of the **VIEW** menu will cause the **Broadband Status** Panel (Figure 6-10) to appear. It displays current control, drive and test levels as defined in **BROADBAND PROFILES** in the **SETUP** Menu.

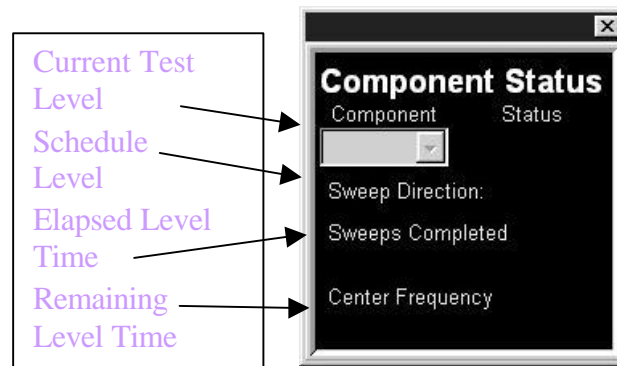


Figure 6-9. Tone Status Panel **Need info.**

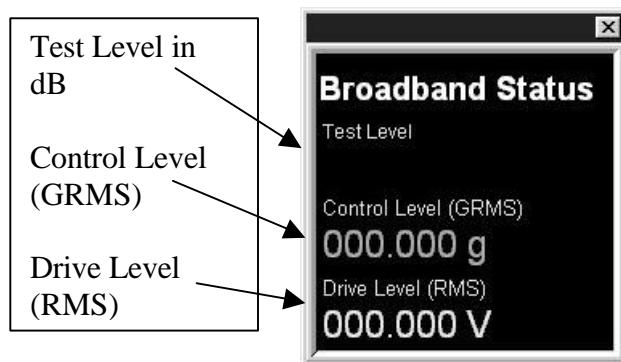


Figure 6-10. Broadband Status Panel

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6.2.3.6 Channels Status Panels

When a **CHANNEL STATUS PANELS** Menu Option is selected a window similar to the one shown in Figure 6-11 will display. The Channel Status windows give GRMS information about the channels in four-channel increments. The measurement is to the nearest one thousandth. If the 10-channel package is purchased the channel output for channels 11 and 12 will be greyed out.

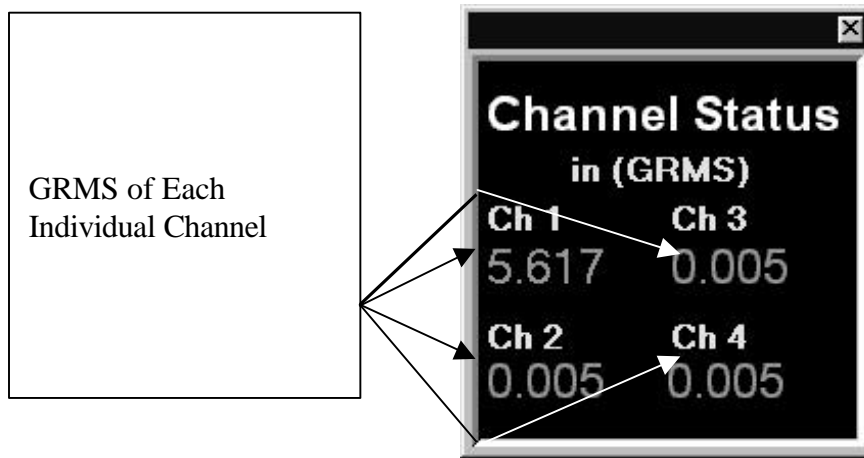


Figure 6-11. Typical Channel Status Panel

6.2.3.7 Test Schedule Status

When the **TEST SCHEDULE STATUS** Menu Option is selected from the **VIEW** menu the **Test Scheduling** Dialog appears. See Figure 6-12.

This dialog gives information about the test(s) currently loaded. If the rows are blank, schedule(s) are not loaded in the **SETUP** Menu portion of the test. To load schedules navigate the path:

Setup ⇒ **Schedules** **Schedule Setup Window** *Test Schedule* Tab.

Load the desired profiles and schedules using the browse buttons then click the **< RUN SCHEDULE >** button.

Test Scheduling					
	Profile	Level Schedule	Delay	Cycles	Current Cycle
1	a\RCTS\RANRCT.pro	a\RCTS\RANRCT.sch	0000:000:020	004	001
2	a\RCTS\RANRCT.pro	a\RCTS\RANRCT.sch	0000:000:010	002	
3					
4					
5					
6					
7					
8					
9					
10					

Figure 6-12. Test Scheduling Window

6.2.4 Message Log Font

When **MESSAGE LOG FONT** is selected from the **VIEW** menu, a standard Windows font dialog box appears. Refer to the Windows documentation for further information.

6.2.5 OLE App Launcher

The OLE Application Launcher is a link to the folder holding any active-x applications written by the user. See Figures 6-13 thru 6-17.

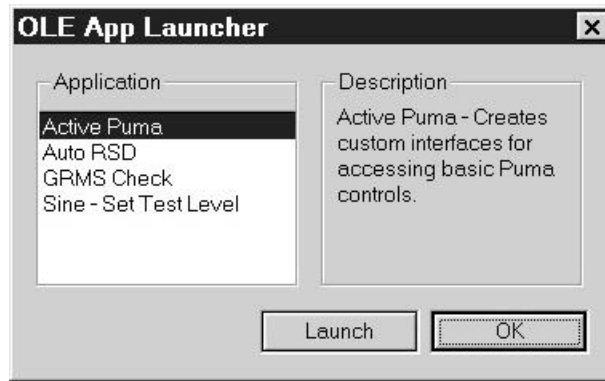


Figure 6-13.

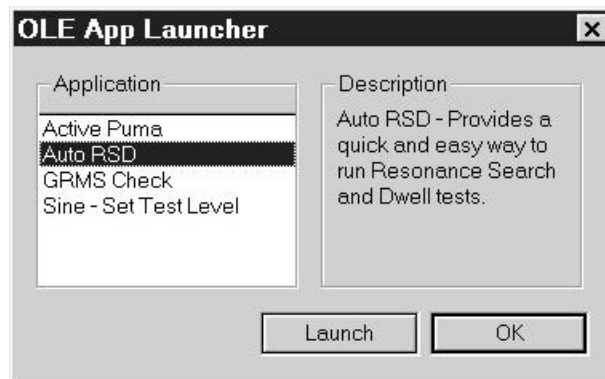


Figure 6-14.

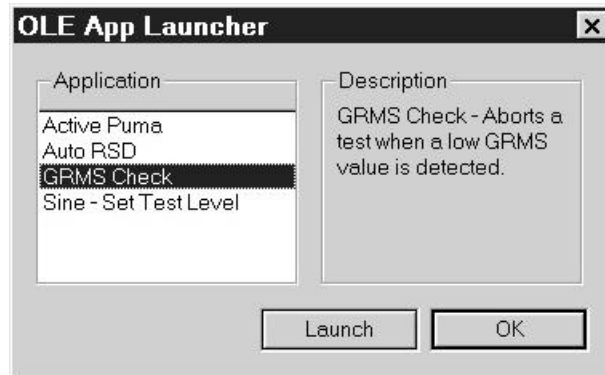


Figure 6-15.

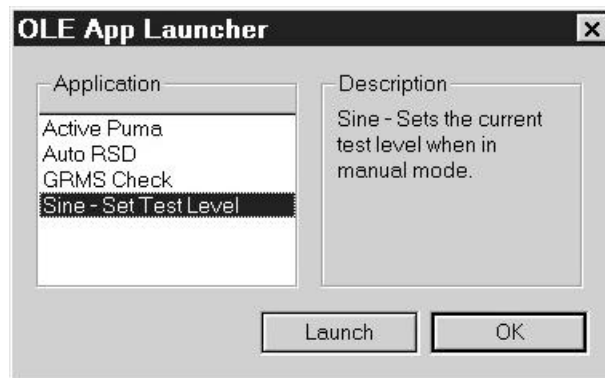


Figure 6-16.

6.2.6 Current Display Settings (PUMA Desktop Toolbar)

Tucked between the menu bar and the tool bar is the **PUMA Desktop Toolbar** accessed with the **CURRENT DISPLAY SETTINGS** Menu Option in the **VIEW** Menu. When selected, each item in the list will arrange the desktop in a predetermined layout. Each template listed has its particular components that are laid out in a specific arrangement. The user can modify each template and arrange the screen components to suit their needs.

Chapter 7 - Test Menu

7.1 Introduction

When the **T**EST option is selected from the Random Menu, the image shown in Figure 7-1 displays. After the test begins, the options change as shown in Figure 7-2. Most of the commands can also be issued from the Test Control. See Chapter 6.

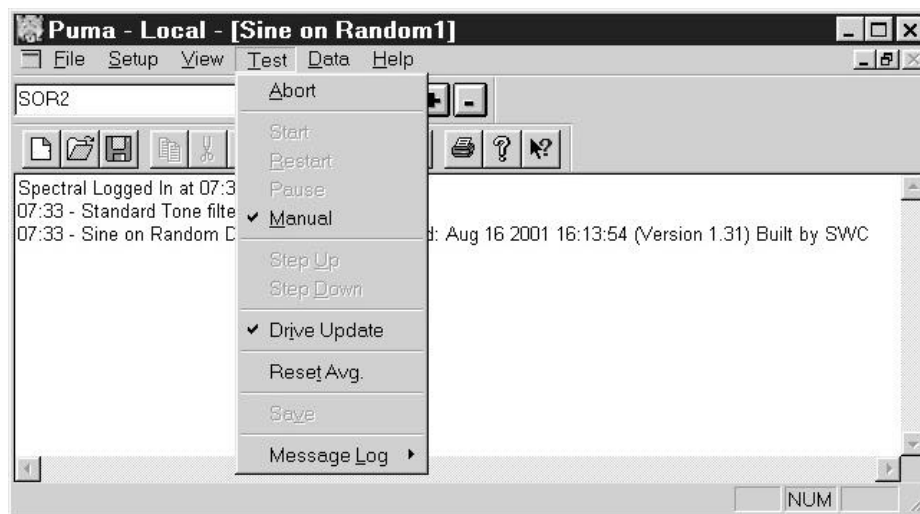


Figure 7-1. The **T**est Menu Options Prior To A Test



Figure 7-2. The **T**est Menu Options During A Test (Need SOR)

7.2 Test Submenus

Each of the items on the **T**EST menu is described in the following paragraphs.

7.2.1 Abort

The **A**BORT menu option allows the user to abort the currently running test.

7.2.2 Start

The **S**TART menu option starts the test if either of two criteria has been met:

- ❑ A previous test file has been loaded
- ❑ Test parameters have manually been input for all phases of the test.

After the test starts the label changes to read STOP.

7.2.3 Restart

The **R**ESTART menu option restarts the test from the same point that the test was stopped with a **PAUSE**, **STOP** or **ABORT** menu option.

7.2.4 Pause

The **PAUSE** menu option stops the test and waits for a command to continue or stop.

7.2.5 Manual

The **M**ANUAL menu option allows the user to take manual control of the test so that parameters other than the ones originally started with can be used.

7.2.6 Step Up

The **S**TEP **U**P menu option allows the user to manually increase the test one schedule level while in the manual mode.

7.2.7 Step Down

The **S**TEP **D**OWN menu option allows the user to manually decrease the test one schedule level while in the manual mode.

7.2.8 Drive Update

The **D**RIVE **U**PGRADE menu option allows the user to toggle (on/off) the updating of the drive signal. Turning it off effectively replays the same drive signal continuously. **Use with caution.**

7.2.9 Reset Average

Selecting **RESET AVG** will begin Monitor and Auxiliary Averaging in either Linear or Exponential Mode.

7.2.10 Save

The **SAVE** menu option allows the user to save the current frame of data to a file.

7.2.11 Message Log

The Message Log is the file of information being generated and is displayed as the test is running. The **MESSAGE LOG** submenu has submenus of its own. See Figure 7-3. There is a Pre-Test and Post-Test Dump and a Message Priority selection with three submenus of its own. The submenus are discussed below.

7.2.11.1 Pre-Test Dump

When the test is started PUMA performs a **PRETEST DUMP**. It lists the specifications of the test and normally includes: [More required?](#)

- | | |
|---------------------------------------|------------------------|
| • Test Name (path) | • Control DOF Value |
| • Channel Table (path) | • Auxiliary DOF Value |
| • Control Profile (path) | • Resolution Value |
| • Additional Channel
Profile Paths | • Min. Frequency Value |
| • Schedule (path) | • Max. Frequency Value |

7.2.11.2 Post-Test Dump

The **POST TEST DUMP** lists any errors and the levels encountered during the test cycle. One example would be a Max Error Signal report.

7.2.11.3 Message Priority

Message Priority The three levels of Message Priority are **HIGH**, **MEDIUM** and **ALL**. While it is highly recommended that the default (All) be used, the other choices are offered for those users that continually run the same test or repeat a number of cycles of the same tests and do not need to see all the log file messages



Figure 7-3. Message Log Sub-Menus

Chapter 8 - Data Menu

8.1 Introduction

When you select the **D**ATA option from the menu bar the menu shown in Figure 8-1 will display.

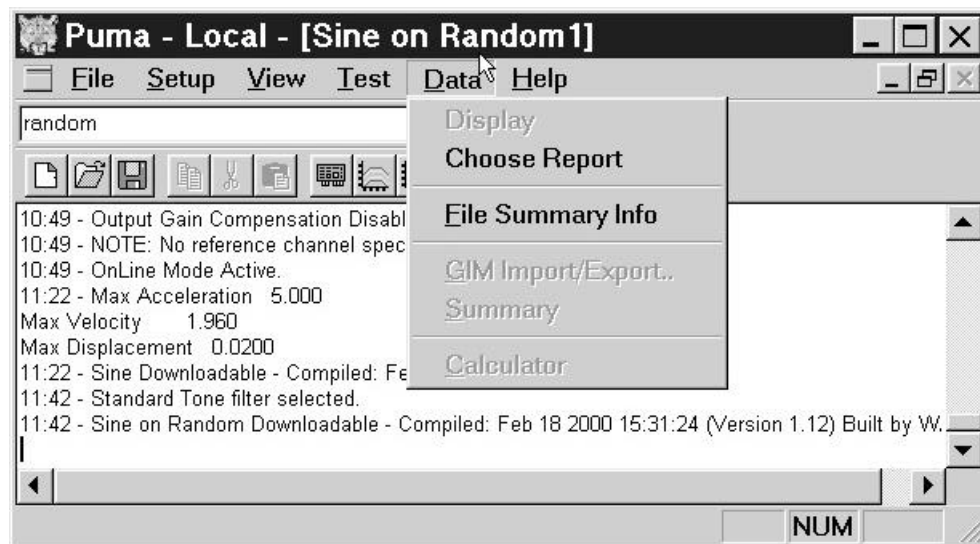


Figure 8-1. The Data Menu Prior to Any Test Being Run

The **D**ATA menu consists of: **D**ISPLAY (of Sine on Random Test Data.syn file), **C**HOOSE **R**EPORT, **F**ILE **S**UMMARY **I**NFO, **G**IM **I**MPORT/**E**XPORT, **S**UMMARY, and **C**ALCULATOR.

8.2 Data Submenus

All of the **D**ATA Menu items are described next.

8.2.1 Display

The **D**ISPLAY option is not available until after the testing begins. After the required parameters are input and the test has been started, the menu option reads: *Display Sine on Random Test Data.syn*. See Figure 8-2. This is a synopsis file that summarizes the most recent test that has been run.

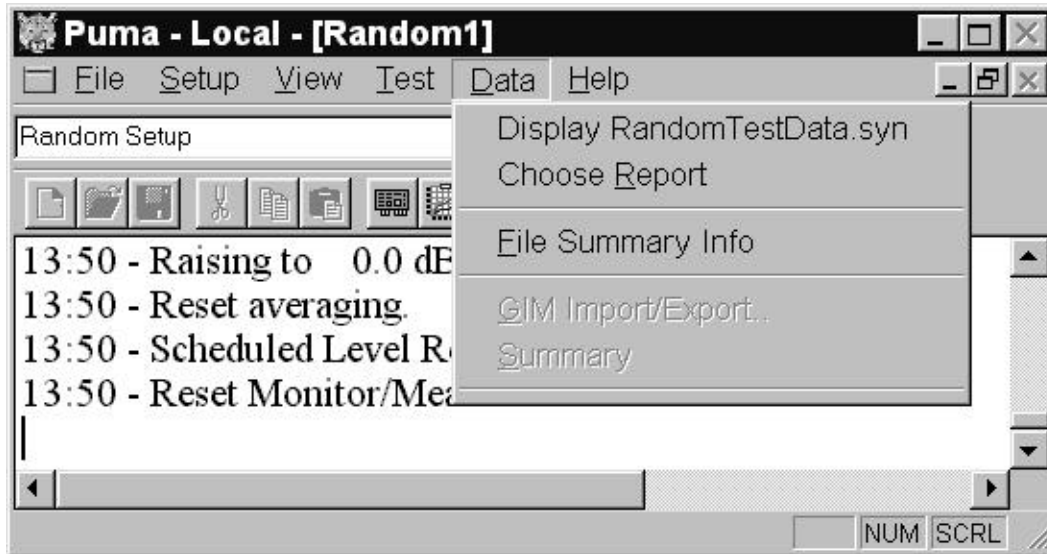


Figure 8-2. The Data Menu After Starting A Test. **Need new Graphic.**

8.2.2 Choose Report

The **CHOOSE REPORT** option activates an **OPEN** Dialog Box similar to the **SAVE AS** Dialog Box, which allows the user to search for and select the file that contains the required report. See Figure 8-3.

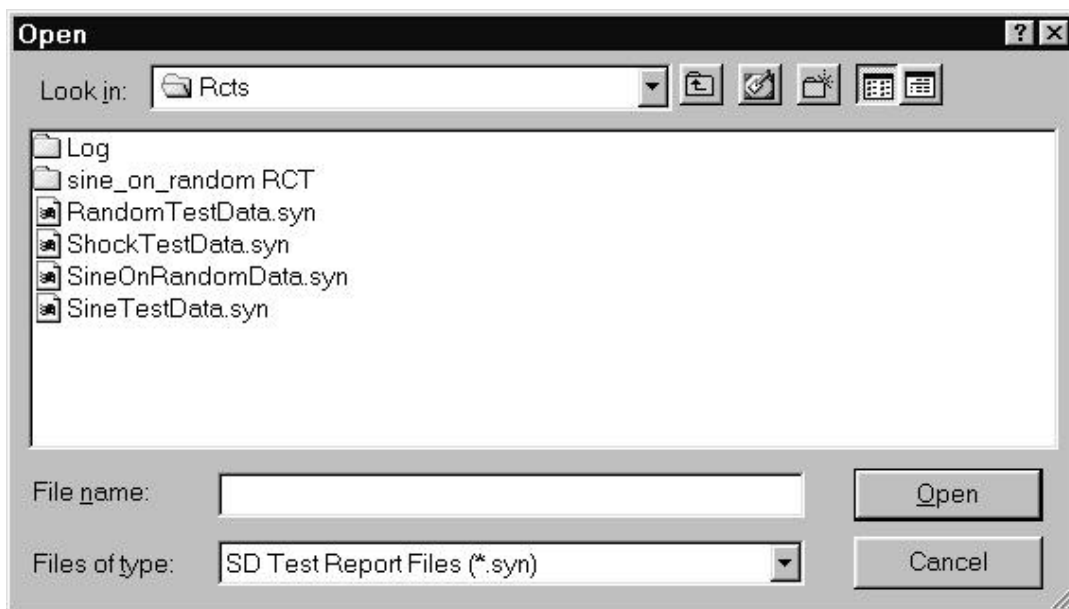


Figure 8-3. Results of Selecting Data ⇒ Choose Report

8.2.3 File Summary Info

When the **FILE SUMMARY INFO** option is selected, the **Document Properties** Dialog Box shown in Figure 8-4 will display. It has two index tabs, labeled: **Summary**, and **Statistics**, which are described next. At the bottom are the standard Windows buttons <OK>, <Cancel>, <Apply>, and <Help>. For information about these buttons see your Windows documentation.

8.2.3.1 Summary Tab

The **Summary** Index Tab contains seven fields. The first field **Application**, names the software program that is currently loaded. The other six fields **Author**, **Keywords**, **Comments**, **Title**, **Subject** and **Template** allow you to add summary information.

8.2.3.2 Statistics Tab

Figure 8-5 displays the **Statistics** Index Tab information. It lists ten lines of basic information about when the file was created, how large it is, and so forth.



Figure 8-4 Document Properties Dialog Box

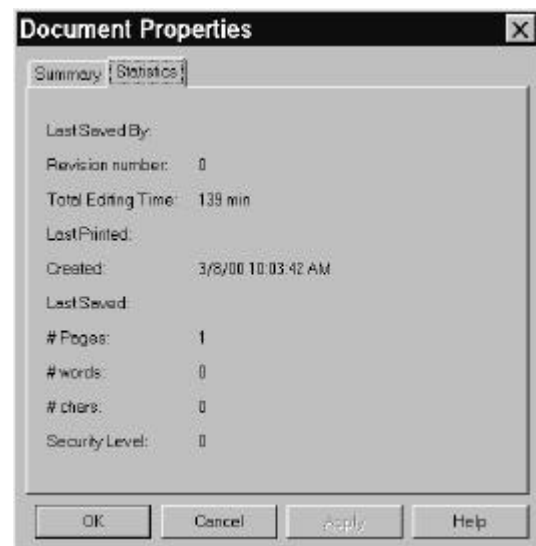


Figure 8-5. Statistics Index Tab

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8.2.4 GIM Import/Export

The GIM IMPORT/EXPORT menu option allows the user to [NEED INFO](#)

8.2.5 Summary

The SUMMARY menu option allows the user to [NEED INFO](#)

Chapter 9 - Help Menu

9.1 Introduction

When the **H**ELP Menu Option is selected, the menu shown in Figure 9-1 will display. This menu consists of **H**ELP TOPICS, **T**UTORIAL, **H**INTS, **S**UPPORT, **S**TARTUP WIZARD, and **A**BOUT PUMA. After the test begins the menu changes. See Figure 9-2.

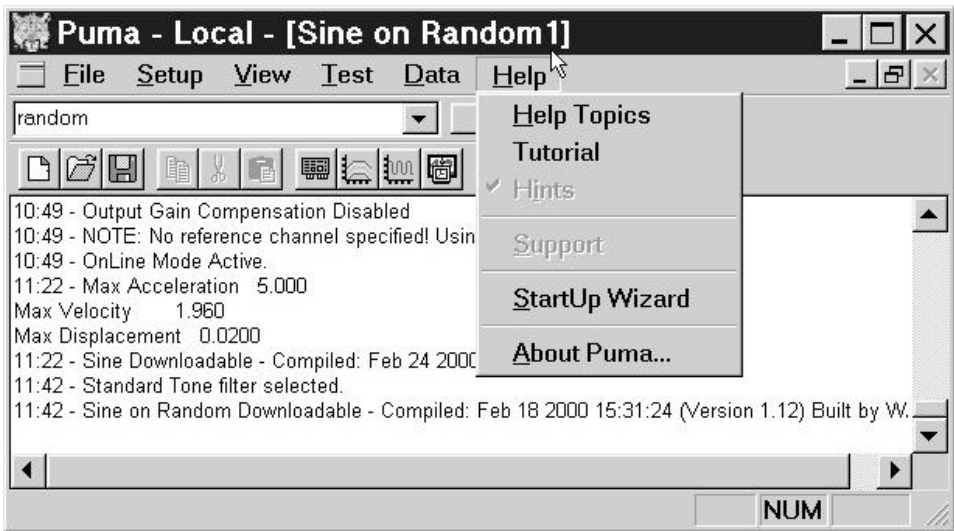


Figure 9-1. The Help Menu Prior to Starting Test

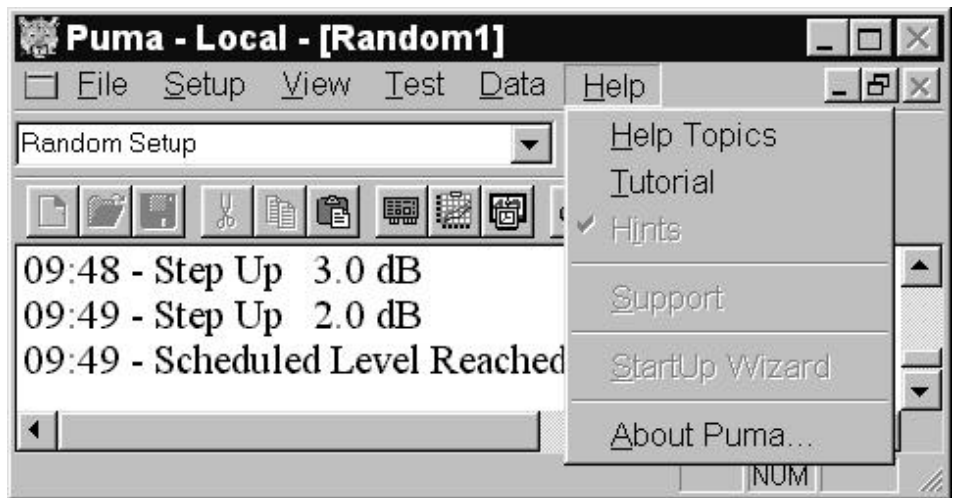


Figure 9-2. The Help Menu After Starting Test Need new image.

9.2 Help Menus

The following paragraphs describe the **H**ELP Menu Submenus.

9.2.1 Help Topics

The **H**ELP TOPICS Menu Option launches the Spectral Dynamics On-Line Help on the website. Figure 9-3 displays the **Welcome Page**. Figure 9-4 displays the result of selecting the Sine On Random choice on the Welcome Page.

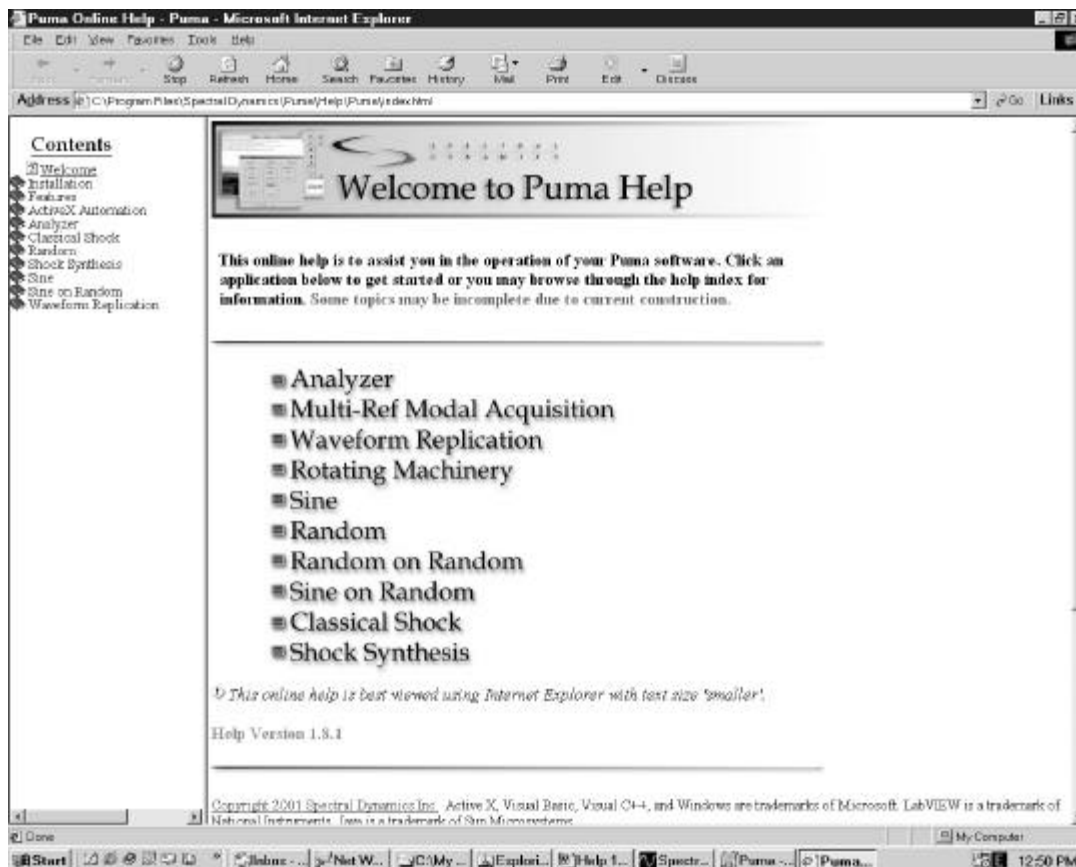


Figure 9-3. Result of Clicking on Help Topics.

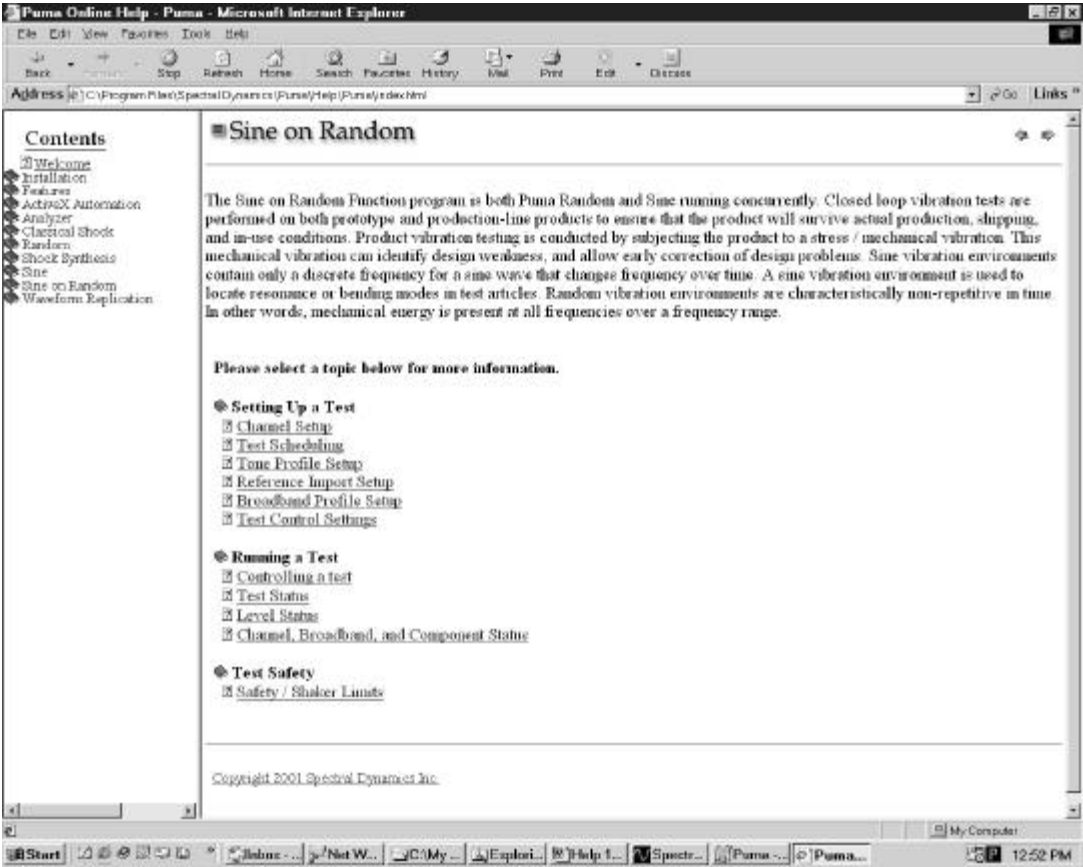


Figure 9-4.

9.2.2 About PUMA

The About PUMA Window (Figure 9-5) features a rolling, bouncing cube with a picture of a Puma and the CATS PUMA logo. The right side of the window displays version, build and copyright information.



Figure 9-5. The About Puma Screen