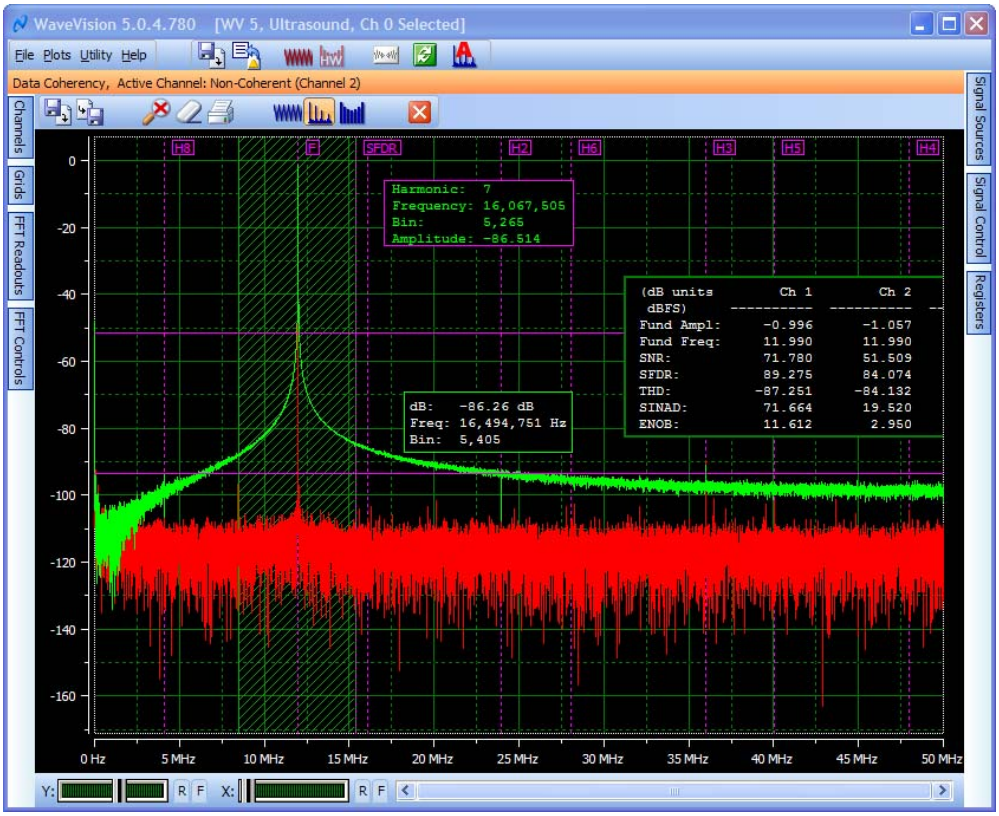
National Products
from Texas Instruments

WaveVision 5 Software

Data Acquisition and Analysis Tool



User's Guide

October 2008

Table of Contents

1.0 The WaveVision 5 System

WaveVision 5 is National Semiconductor's evaluation system, designed specifically for lab evaluation of National Semiconductor's Signal Path solutions. It consists of two main components:

1. The Data Capture Board
2. The Graphical User Interface (GUI) control software

Both the board and the software have evolved through a few major generations.

The WaveVision 5 data capture board is the latest generation of the WaveVision hardware. The functionality and features of the WaveVision 5 data capture board are described in the "*WaveVision 5 Data Capture Board User's Guide*". This guide may be obtained from National Semiconductor's website at www.national.com.

The WaveVision 5 software is National Semiconductor's state-of-the-art data capture and analysis program. While WaveVision 5 continues the tradition of excellence provided by previous generations of the WaveVision software family, it is a completely new program, designed and written from the ground-up to be faster and more accurate, and provides many new powerful features.

The WaveVision 5 system provides automatic detection of the connected hardware. The firmware reads the content of the EEPROM on the Device Under Test (DUT) board. Each supported device has unique script (configuration) and FPGA image file. Upon detection of the hardware, the script file is read, and the image file is loaded into the FPGA on WaveVision 5 Data Capture Board.

The WaveVision 5 system leverages 'WV5 Core' functionality, providing a Dynamic Link Library (DLL) interface (API) to the hardware. This API can be used to interface software you develop in-house with WaveVision 5 hardware.

This user's guide provides an overview of the capabilities of the WaveVision 5 software, and shows you how to quickly perform basic tasks. The first few sections of this document address these topics. The rest of the document gives further functional details of each feature.

The latest version of this document may be obtained from National Semiconductor's website at www.national.com.

For your convenience, in this User's Guide, a standard Windows help file and the software release notes are available on the help menu.

Important Notes

- When powering ON the hardware, you should follow this sequence
    - Disconnect the USB cable from the WV5 board
    - Apply power to the WV5 board
    - Apply power to the DUT board
    - Plug the USB cable into the WV5 board
- When powering OFF the hardware, the above steps should be reversed
- Hot-swapping DUT boards without powering off both the WV5 board and the DUT is not supported. Always, power off both boards before changing DUTs
- The WaveVision 5 software has NOT been tested with WaveVision 4 hardware

2. 0 Overview

2.1 - Features and Capabilities of WaveVision 5 Software

The software's primary purpose is to capture, store and analyze data from National Semiconductor's Evaluation and Reference Boards, which may be connected through a National Semiconductor WaveVision 5 Data Capture Board. The software also allows the user to read/write the hardware's control and status registers as available.

The WaveVision 5 Software provides many powerful features that make it easy for you to capture and analyze data. This section lists a few of the key features of the software:

- Provides 3 plot types
    - Time Domain (Oscilloscope)
    - Fast Fourier Transform (FFT)
    - Histogram
- Provides the ability to read/write the hardware’s control and status registers
- Auto-discovery of connected boards
- Annotations that are saved with the plot
- Annotations that are saved with the channel
- FFT averaging
- Continuous data acquisition
- Multiple data exclusion areas for FFT calculations
- Allows import of ASCII data sets, including WaveVision 4 data
- Supports an unlimited number of plots
- Each plot provides 4 data channels (traces) which may be superimposed
- Includes a sophisticated data logging system
- Includes an exception handling mechanism

- Includes code that allows you to make suggestions or report problems from within the program
- Includes 8 software signal generators which can be combined
- Includes 3 new FFT windows
- Plots may be dragged onto your screen
- Channel data may be saved separately
- Plots and channels include a word-processor like editor to record your notes
- Program and plot tabs pop open; they may be pinned open if desired
- Supports many of National's Evaluation and Reference Boards
- Supports USB 2.0
- Supported Operating systems: Windows 2000, Windows XP

The only limit on the number of windows that may be opened at once is your computer's memory. The only limit on the number of DUTs which may be attached is the capture hardware.

2.2 - Installation

The first few steps depend upon how you get the WaveVision 5 software.

If you've received the WaveVision 5 software on CD ROM (in WaveVision 5 kit; National order number WAVEVSN BRD 5.1):

1. Insert the CD-ROM in your computer's CD drive.
2. Open Windows Explorer and browse to the CD's root directory.
3. Find the install file, WV5Setup.exe.

To download the software from the National Semiconductor Website:

1. Open your browser and browse to http://www.national.com/analog/adc/wavevision5
2. Double-click on the WaveVision 5 download link.
3. Save the install file, WVSetup.exe, to your computer.

In either case, continue installation as follows:

1. Double-click on WV5Setup.exe to launch the installer. The installer dialog box will open.
2. On the installer dialog box, click the 'Next' button.
3. On the next page you will be given the option to select an installation directory. We recommend that you install WaveVision 5 into the default directory, but you may install it anywhere you choose.
4. Click the 'Next' button twice.

5. On the next page, choose the locations where you want to install the WaveVision 5 icons.
6. Click the ‘Next’ button and make sure the install options meet with your approval. Use the Back button if you want to change anything.
7. Click the ‘Install’ button and installation will begin.
8. When the installer has finished, the program’s release notes will be displayed. Please take a few moments to read through this document. At the bottom of the release notes in the Errata section, you will find a list of WaveVision 5 problems of which we are aware, and workarounds as appropriate.
9. You may now launch WaveVision 5 via the program icons you selected during installation.

The first time you start WaveVision 5, you will be presented with a dialog box asking if you would like to allow the program to automatically check for updates. We recommend that you click ‘Yes’ so you will be notified when updates are available.

If you click ‘No’, you will still be able to check for updates manually from the Utility menu.

The computer on which you have installed WaveVision 5 must have access to the Internet for the update process to work.

There are many folders under the WaveVision5 directory. The folder that is most useful to a user is the Data folder. Data folder has many sub-folders such as LogFiles, (Data) Import, (Data) Export etc. These sub-folders keep or provide important information for a user to manipulate WaveVision 5 software.

Details of directory structure and included in the Appendix

2.3 - Operational Model

Signal sources are needed to provide input signals to the DUT in order for WaveVision 5 to capture data. WaveVision 5 supports two different types of signal sources:

1. Attached data Capture Board/Evaluation Board or Capture Board/Reference Board pairs
   (some Reference Boards may have the signal-path and capture function integrated onto one board)
2. Software signal generators.

The signal source is selected on the Signal Sources tab, and the destination is selected on the Signal Control tab. Once these selections are made, a button is pressed to begin data acquisition.

The signal data is collected from the source and routed to a destination, where it is stored or displayed. The WaveVision5 software currently supports one type of signal destination – plots. Once the data is displayed in a plot, it may be saved to disk or exported as desired. WaveVision 5 allows user to have multiple plots open on the screen at the same time.

The controls on the Signal Sources tab are used to select various signal parameters such as the size of the buffer to be acquired. The controls on the Signal Control tab are used to select the destination plot and plot channel to which the acquired data will be sent.

WaveVision 5 also allows the user to access any control and status registers which may be available on the connected DUT. If available, these controls are provided on the ‘Registers’ tab on the right side of the application. Not all DUTs have registers, so the Registers tab will not appear for all DUTs.

Data acquisition is initiated from the selected signal source by pressing either the ‘Acquire Data’ or ‘Acquire Continuous’ buttons on the application’s main toolbar. The ‘Acquire Data’ button will acquire one buffer of data while ‘Acquire Continuous’ will acquire one buffer after another until the button is clicked again.

Once the plot contains one or more channels of data, the user may view that data in one of the following three types:

1. Time Domain (Oscilloscope)
2. Fast Fourier Transform (FFT)
3. Histogram

Plots may be annotated with notes that are associated with the plot itself (always in the same position on the plot screen) or are associated with the channel data (and thus scroll with the data to maintain the same channel-relative position).

The user may save an image (picture) of the plot to disk in several formats: .BMP, .JPG, .PNG and .EMF are currently supported. The user may also print the plot to a printer. Images and printouts include whatever is visible on the plot at the moment (annotations, floating readouts, harmonic markers, etc). Images are by default stored in the Data/Exports directory.

When data is acquired or loaded from disk, it is placed in one of the four channels associated with each plot. Thus, the data is associated with a specific channel (rather than with the plot as a whole). Also associated with each channel are channel annotations, exclusion areas, channel trace color and style, the name assigned to the channel and the notes written to describe the channel. Channel data and its associated information may be saved to or loaded from disk as a unit, independent of other channels displayed in a plot.

Like channels, plots may be saved to disk. A plot consists of the names of each of the channel files associated with the plot, as well as general plot information such as its name, the notes entered to describe the plot, plot annotations, plot grid and background colors and styles and plot FFT settings.

Thus a plot is a collection of channel data file names and other plot-specific data. The advantage of this system is that you can create a plot of various previously captured channel files so that you may view, compare and store them as a set. Channel files are stored in the Data/ChannelData directory and plots are stored in the Data/PlotData directory. Keep in mind that if you delete a channel data file, it will no longer be available to any plot files which include it.

Both of these directories come pre-populated with several sample data files for you to experiment with. The sample files are also stored in an ‘OriginalSampleFiles’ directory so you may recover them if you change or remove them.

3.0 Quick Guide on……How do I

This section briefly describes how to perform the most common tasks. More functional detail is available in later sections.

3.1 - Capture Data

Capturing data with WaveVision 5 is quick and easy. Here are the steps you will need to take:

1. Make sure you have a plot open. If necessary, create a new plot.
2. Select the signal source from the Signal Sources tab.
3. Select a signal destination from the Signal Control tab.
4. Acquire
5. Press the ‘Acquire’ button to capture a single buffer of data
6. Press the ‘Acquire Continuous’ button to capture one buffer after another as quickly as possible.
7. The data will appear in your destination plot channel.

3.2 - Create a New Plot

WaveVision 5 supports two distinct types of plots:

1. Time Domain plots
2. Hardware Histogram Data plots

Time Domain plots are the most commonly used; Hardware Histogram Data plots are only available when the attached Evaluation Board or Reference Board supports hardware histograms. If the attached hardware does not support hardware histograms, this option will be disabled.

Create a Time Domain Data plot

Time Domain plots display data captured from an ADC Evaluation or Reference Board, or generated by a software signal generator. The data may be displayed in several different views: Time Domain, FFT, or Histogram. To create a new time-domain plot, click on the 'Create a New Time-Domain Plot' button on the main toolbar.

Create a Hardware Histogram Data plot

Hardware histograms are used to display histogram data captured by the hardware itself. This plot can display only histogram data. To create a new Hardware histogram data plot, click on the 'Create a New Hardware Histogram Plot' button on the main toolbar. If the attached hardware does not support hardware histograms, this button will be disabled.

3.3 - Load a Saved Plot

To create a new plot window and load a plot into it, click on the ‘Load Plot’ button on the Main Toolbar.

To load a saved plot into an existing plot Window, click on the ‘Load Plot’ button on the Plot Toolbar.

Either method will open the Plot Load Dialog.

3.4 - Save a Plot

To save a plot, click on the ‘Plot Save’ button on the Plot Toolbar. The Plot Save Dialog will open.

3.5 - Print a Plot

To print a plot, click on the ‘Print’ button on the Plot Toolbar. A standard print dialog will open.

3.6 - Save an Image to Disk

To save an image to a disk file, open the ‘Save Image’ sub-menu on the Context Menu, then click on the type of image file you wish to save.

3.7 - Import ASCII Data

Data saved in ASCII format may be imported into either a new plot, or a channel of an existing plot.

To import data into a new plot, click the ‘Import Data’ button on the Common Toolbar. A new plot will be created and the Import Dialog will open. Data will be imported to channel 1 of the new plot.

To import data into an existing plot, click the ‘Import Data’ button on any Channel Toolbar. The Import Dialog will open for that channel.

3.8 - Export Data

To export a channel's data to an ASCII file, press the ‘Export Data’ button on any Channel Toolbar. Only data for the associated channel will be written to the disk.

NOTE:
The data exported is the data from the plot type being displayed. If a time domain data plot is being displayed, then time domain data is written to the file. If a FFT plot is being displayed, then the FFT bin data is written to the file. If a Histogram Data plot is being displayed, then histogram data will be written to the file.

3.9 - Select a Plot Type

To select a plot type, click on either ‘Time Domain’ or ‘FFT’ or ‘Histogram’ button on the Plot Toolbar. The current dataset will be displayed in the selected format.

3.10 - Display Channel Data

By default, data for the Active Channel is displayed on the plot. If you wish to display data for all channels, you must uncheck the Hide Active Channels box on the Channels Tab. Pressing the '0' key on the keyboard toggles this checkbox. Also, pressing the number key corresponding to the channel number makes that channel active.

3.11 - Create an Exclusion Area

Exclusion areas are created from the Context Menu. Once the exclusion area appears on the screen, use your cursor to drag either edge into the desired position.

3.12 - Create an Annotation

Annotations are created from the Context Menu, and edited with the Annotation Editor.

3.13 - Send a Problem Report

Problem reports can be sent manually from the Utility or Help Menus or via the Error Handling module if an exception occurs.

3.14 - Know What Hardware is Connected

The WaveVision 5 Title Bar displays the name of the attached hardware, as well as the currently active channel. Additionally, ADC Panel on the Signal Sources Tab contains a drop-down list which will include an entry for each connected DUT.

3.15 - Send a Comment or Suggestion

You may send us a comment or suggestion via the Help Menu.

3.16 - Enable Logging

Before logging can be enabled, logging engine must be installed. This engine is a separate, background program which ensures that all log file information is written to a disk in the event of a program error. It also helps to keep WaveVision 5 from running slowly when logging is enabled. You can install the logging engine from the Utility Menu.

Once you have installed the logging engine, the Configure Logging item on the Utility Menu will be enabled. Selecting that item will open the Logging Configuration dialog.

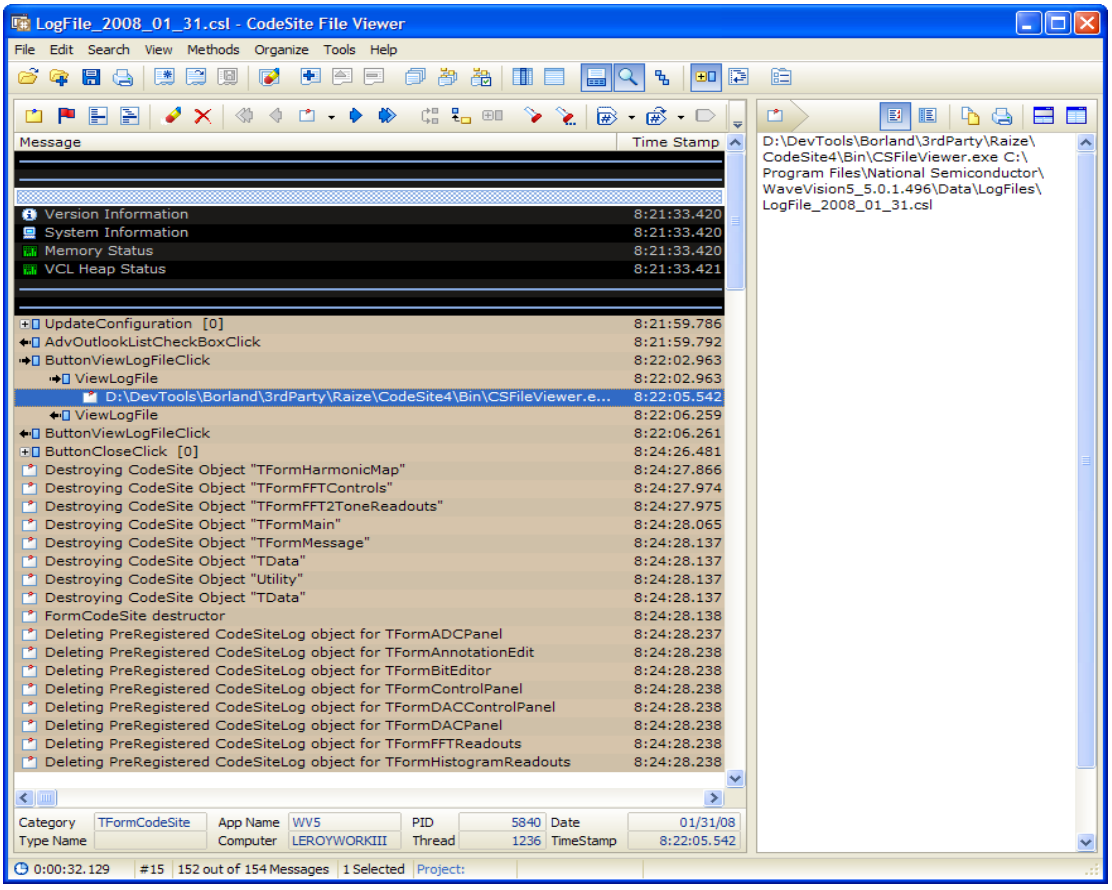
If you wish, you may uninstall the logging engine after you have completed your logging task. Note that we DO NOT recommend you do it. If you leave the logging engine installed, program errors will be logged even if all of the logging modules on the Logging Configuration dialog are disabled (so long as you keep the 'Always Log Errors' checkbox checked).

NOTE:
It is a good idea to install the logging engine immediately after installing WaveVision 5, and to keep it installed. This way, if a program error occurs it will be logged automatically.

3.17 - View a Log File

WaveVision 5 contains a sophisticated logging system that helps to track down program errors. If you experience difficulties, you may be asked to Enable Logging. If you are interested in seeing the information we log, you may do so with the log file viewer (illustrated below).

You may also view log files from the Utility Menu.



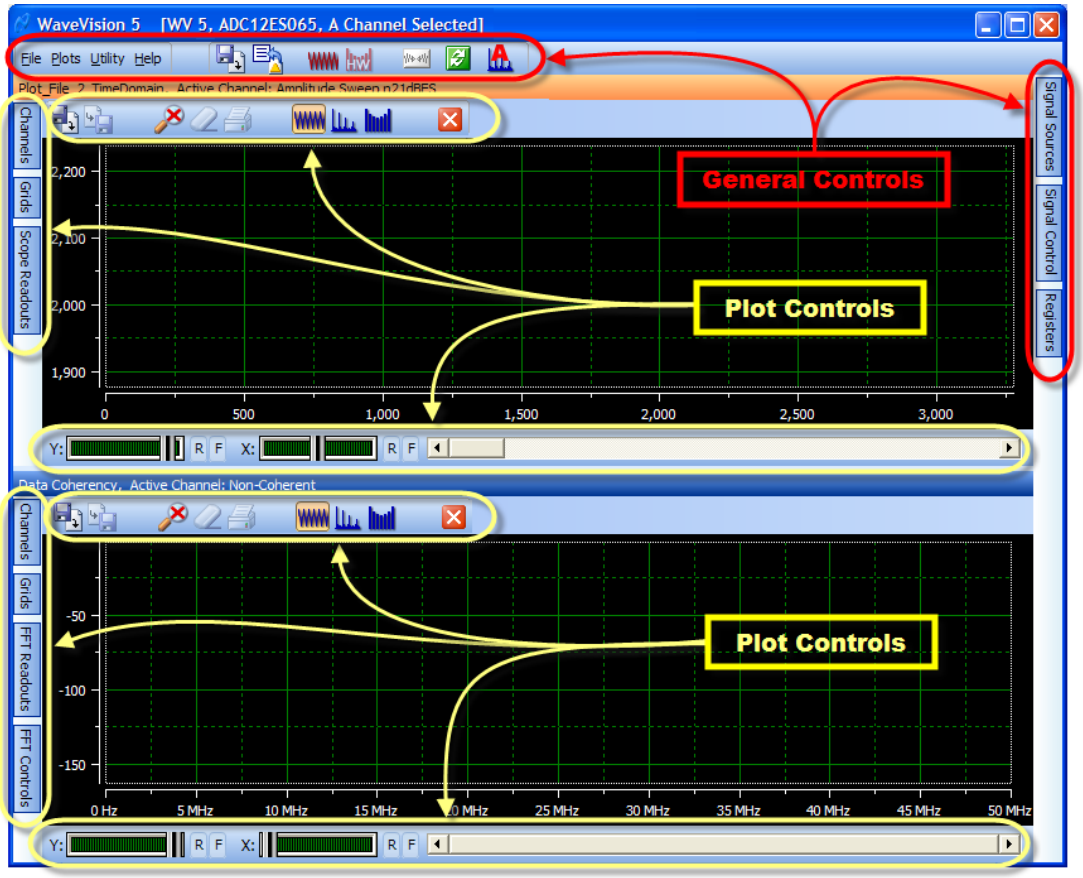
4.0 User Interface

4.1 - The Controls

WaveVision 5 provides two types of controls:

1. General Controls
2. Plot Controls

The following image shows which controls belong to each group.



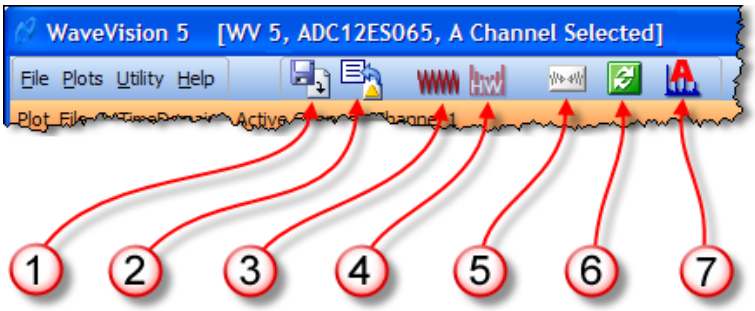
4.1.1 - General Controls

General Controls are used to provide general controls that are common to the application. A few examples of the General Controls are listed below:

- Create new plots
- Start and stop data acquisition
- Toggle single-shot or continuous data acquisition
- Enable/disable FFT averaging
- Configure the number of FFT averaging buffers
- Configure logging (for troubleshooting purposes)
- Send us a suggestion or problem report
- Check for program updates (requires Internet connection)
- Select the data source
- Select the data destination
- Configure the hardware (read/write registers)
- Configure the software signal generators
- Access special-purpose hardware registers
- Access the harmonic mapping tool
- Select the user interface style

The following sections will describe in detail the functionality of each button and tab used for General control of this application.

4.1.1.1 - Main Toolbar



1 - Load Plot

A new plot window is created and the Plot Load dialog is displayed. The selected plot file is loaded into the new window.

2 - Import Data

Clicking this button creates a new time-domain plot and opens the Import Data dialog. Data may be imported from WaveVision 4 data files as well as from ASCII data files created by other programs.

3 - Create a New Time Domain Plot

Clicking this button creates a new time-domain plot. The plot will contain no data, but is available as a data destination.

4 - Create a New Hardware Histogram Plot

Clicking this button creates a new hardware histogram plot. Hardware histograms are available only in conjunction with evaluation boards which can gather histogram data internally. This button is enabled only when an evaluation board which supports hardware histograms is attached.

5 - Acquire Data

Click this button to acquire data to the active plot. If you have created more than one plot, the Active plot has a highlighted title bar.

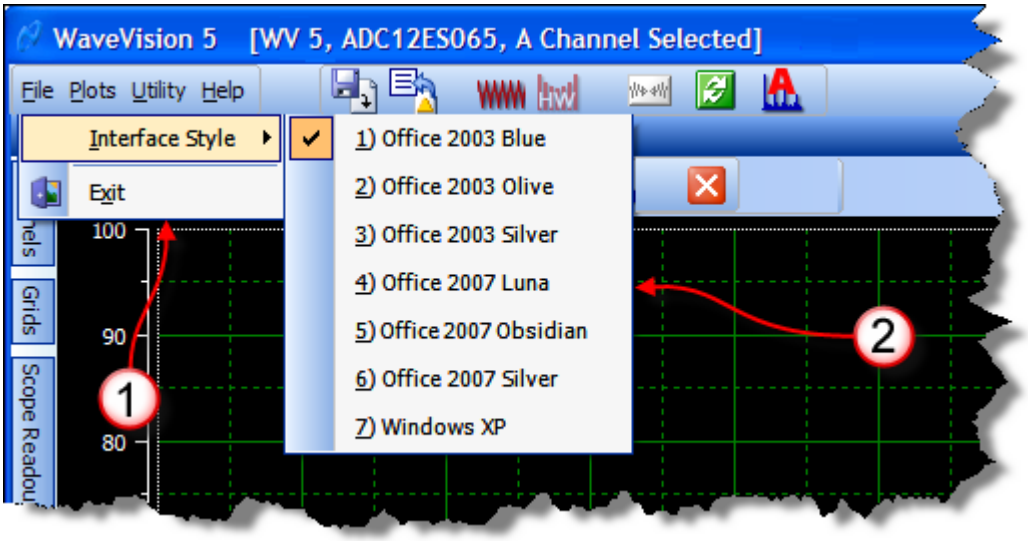
6 - Continuous Acquisition

This button is a toggle - when it is pressed, data is acquired continuously, one buffer after another as fast as the hardware can go; when pressed again data acquisition stops. When in continuous acquisition mode, acquisition may be started and stopped using the Acquire button without leaving the continuous acquisition mode.

7 - FFT Averaging

This button is also a toggle - when it is pressed, FFT's are averaged. The number of buffers to be averaged is specified in the hardware section of the Signal Sources tab.

4.1.1.2 - File Menu



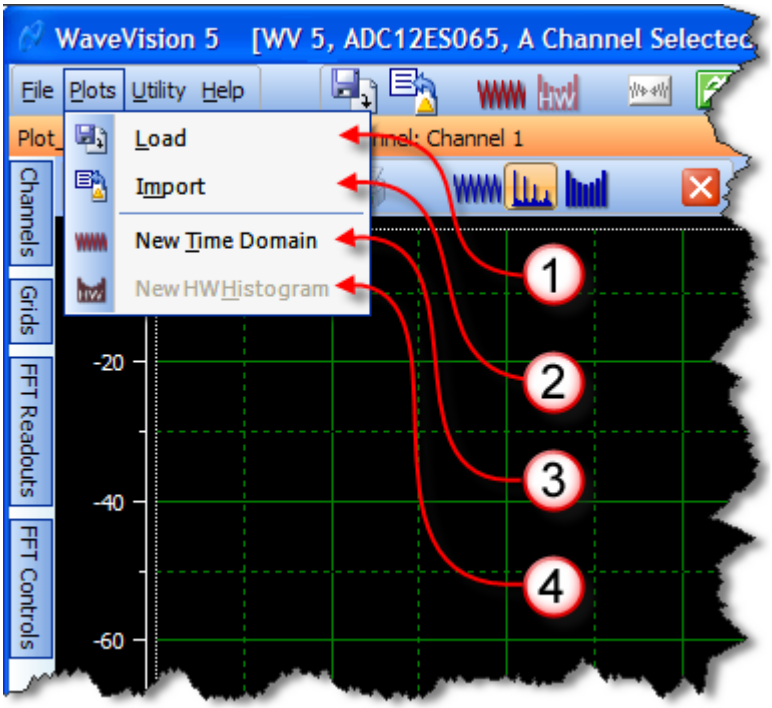
1 - Exit

Exits WaveVision 5.

2 - Visual Themes

Use this sub-menu to select one of seven visual color schemes.

4.1.1.3 - Plot Menu



1 - Load Plot Button

Opens the Plot Load dialog which allows you to select a plot you have previously saved. A new plot window is created and the selected plot data is loaded into the new window. This menu item is identical to button 1 on the Main Toolbar.

2 - Import Plot Button

Opens the Channel Import dialog which allows you to select a file from which to import data. A new plot window is created and the selected ASCII data is loaded into channel 1. This menu item is identical to button 2 on the Main Toolbar.

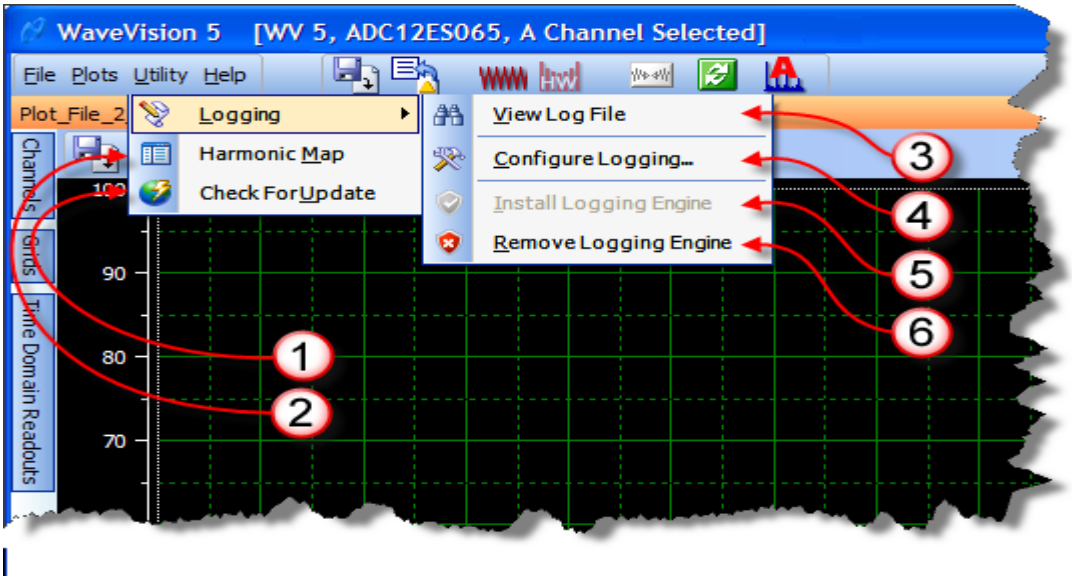
3 - Create New Time Domain Plot

Creates a new, empty time domain plot. This menu item is identical to button 3 on the Main Toolbar.

4 - New Hardware Histogram Plot

Creates a new, empty hardware histogram plot. Note that this option is only enabled when hardware supporting this feature is connected. This menu item is identical to button 4 on the Main Toolbar.

4.1.1.4 - Utility Menu

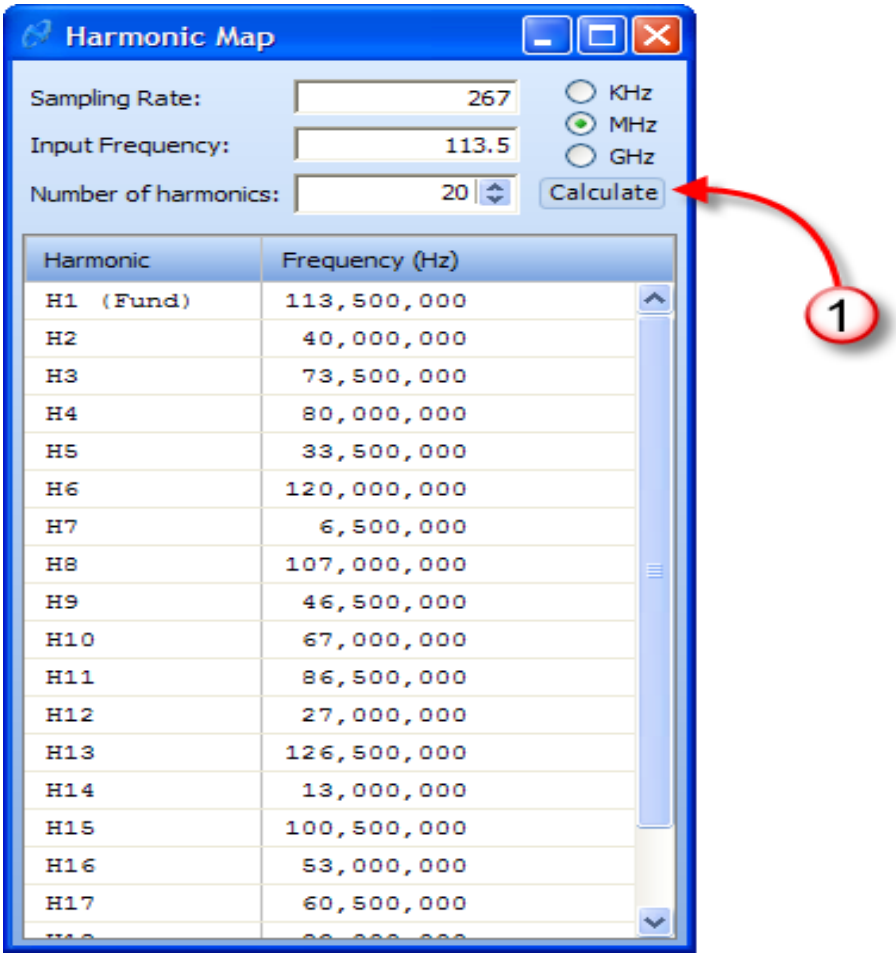


1 - Check For Updates

Click on this item to open the Web Update dialog to check for WaveVision 5 software updates and (optionally) install them.

2 - Harmonic Map

Opens the Harmonic Mapping Tool, which allows you to calculate a list of harmonics from a given sampling rate and input frequency.



Click the **'Calculate'** button to generate the list.

3 - View Log File

You may use this item to view the contents of WaveVision 5 log files. Clicking here will display the files in the log file directory so you may view the files in the Log File Viewer.

4 - Configure Logging

Click here to open the Logging Configuration dialog. This dialog allows you to select which information will be logged, and is described here.

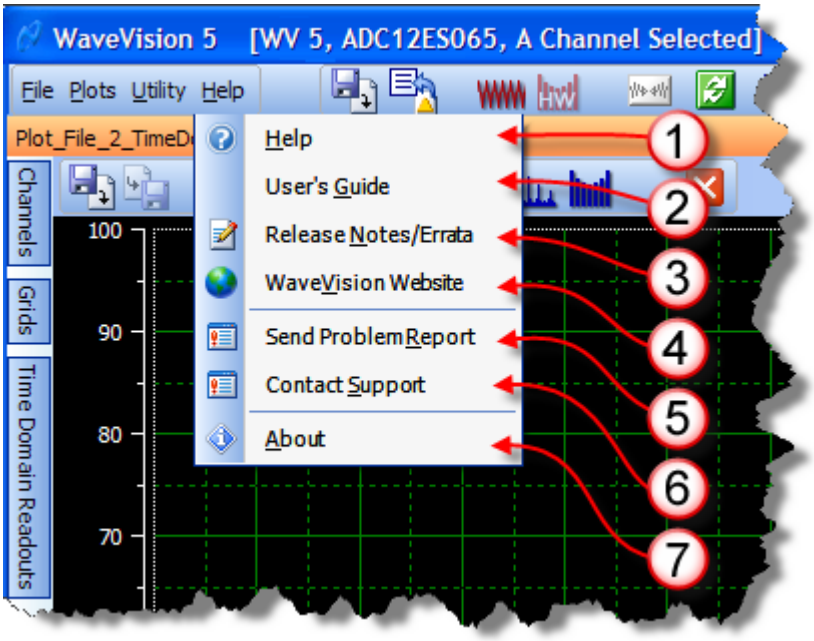
5 & 6 - Install/Uninstall Logging Engine

These items allow you to install or remove the WaveVision 5 Logging Engine, which runs independently of the main program. Logging cannot be enabled unless the engine is installed.

It is recommended that you install the logging engine after installing WaveVision 5

software.

4.1.1.5 - Help Menu



1 - Help

Opens this help file.

2 - User's Guide

Opens the user's guide.

3 - Release Notes/Errata

This item will open the Release Notes that were displayed when you installed WaveVision 5 software The release notes include a list of known bugs and issues.

4 - WaveVision Website

Click here to open your browser and navigate to the WaveVision website. Here you will find more information on the software, including a table of National Semiconductor hardware which has been tested with WaveVision 5 software

5 - Send Problem Report

You may use this function to send a bug report to the development team. The report will include a screen shot of the WaveVision 5 screen as well as the contents of various logs to help us determine the state of the software when you ran into the issue. This information is sent as a .zip file attachment to an email in which you

describe what happened. You may examine the contents of the zip file by opening it before you send the request.

6 - Contact Support

This is similar to 'Send Problem Report', but it does not send WaveVision 5 logging or configuration information. Please use this item to send us suggestions, questions or comments.

7 - About

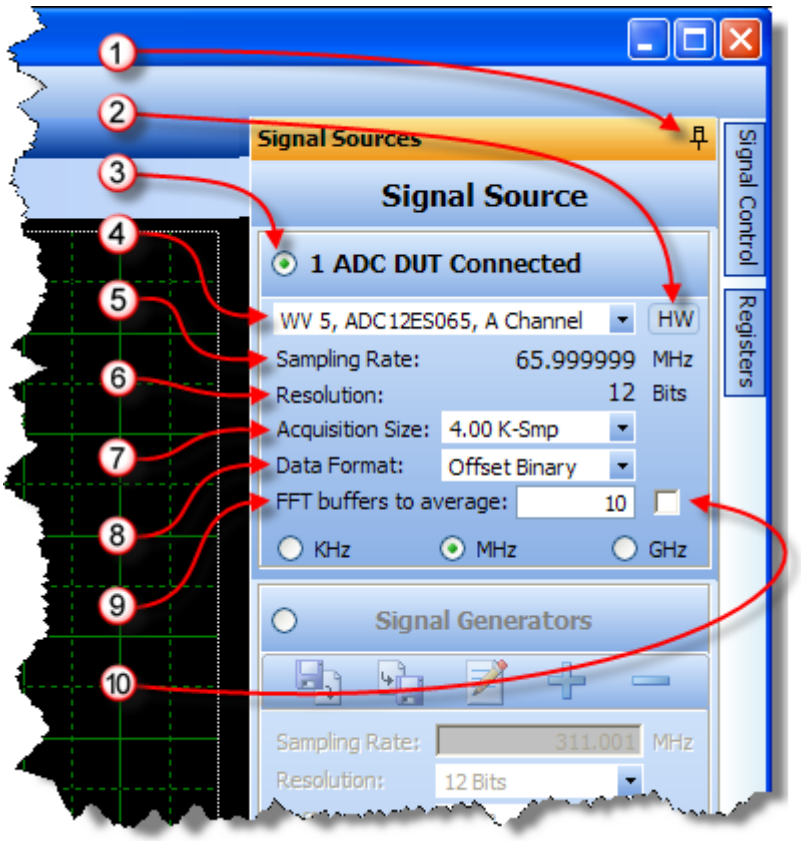
Display the WaveVision 5 About box. The About box displays the version numbers of the various components of WaveVision 5 software as well as those of the connected hardware (as applicable).

4.1.1.6 - Signal Sources Tab

The signal sources tab contains controls for the two types of signal sources supported by WaveVision 5:

1. The upper section contains controls for hardware,
2. The lower section contains controls for the software signal generators.

4.1.1.6.1 - Hardware Controls



1 - Tab Pin

Click on this pushpin icon to pin open the tab.

2 - Rescan Hardware

Press this button to force WaveVision 5 to rescan the USB bus for hardware changes. WaveVision 5 normally automatically detects hardware changes. This button is provided in the event that automatic detection fails.

3 - Select Hardware

Click on this radio button to switch the active signal source to the attached hardware.

4 - Hardware Selector

Clicking on this combo box will display a list of the hardware attached to your computer and allow you to select the channel to use as the active data source.

5 - Sampling Rate

This box displays the sampling rate reported by the selected hardware.

6 – Resolution

The sample width in bits.

7 - Acquisition Size

This combo box allows you to select from among the various data acquisition sizes supported by the selected hardware.

8 - Data Format

Use this combo box to select the format of the data sent from the hardware.

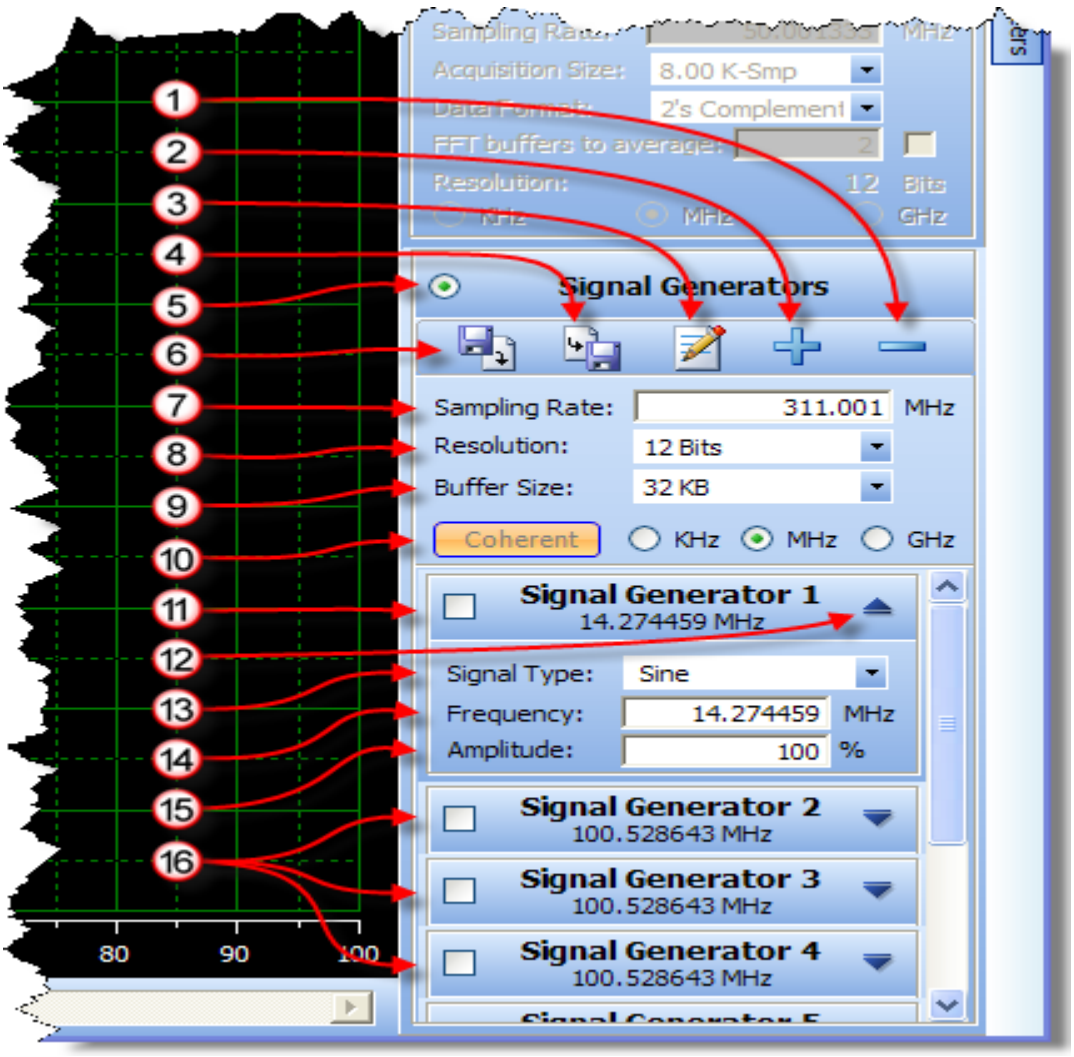
9 - FFT Buffers to Average

Enter the number of FFT buffers to average.

10 - Enable FFT Averaging

Check this box to enable FFT averaging.

4.1.1.6.2 - Software Signal Generator Controls



1 - Collapse all

Clicking this button collapses all of the signal generator controls.

2 - Expand all

Click this button to expand all of the signal generator controls.

3 - Edit signal generator info

This opens the Signal Generator Information dialog in which you can edit information about a set of signal generators.

4 - Save signal generator set

Allows you to save the signal generator control settings as a set of loadable data.

5 - Select signal generators

Click this radio button to select the signal generators as the active data source.

6 - Load signal generator set

Allows you to load a saved signal generator set.

7 - Sampling rate

Set the sampling rate for all 8 signal generators.

8 – Resolution

Sets the sample width for all 8 signal generators.

9 - Buffer size

Sets the size of the data set generated by the signal generators.

10 – Coherent

Sets the signal generator frequencies to coherent values.

11 - Enables signal generator

Each signal generator has an enable checkbox. When the box is checked the signal generator contributes to the generated data.

12 - Expand/collapse

Expands/collapses the signal generator control panel.

13 - Signal type

Sets the type of wave generated: sine, square, triangle, saw tooth, sine x/x

14 - Buffer size

Sets the size of the data set generated by the signal generators.

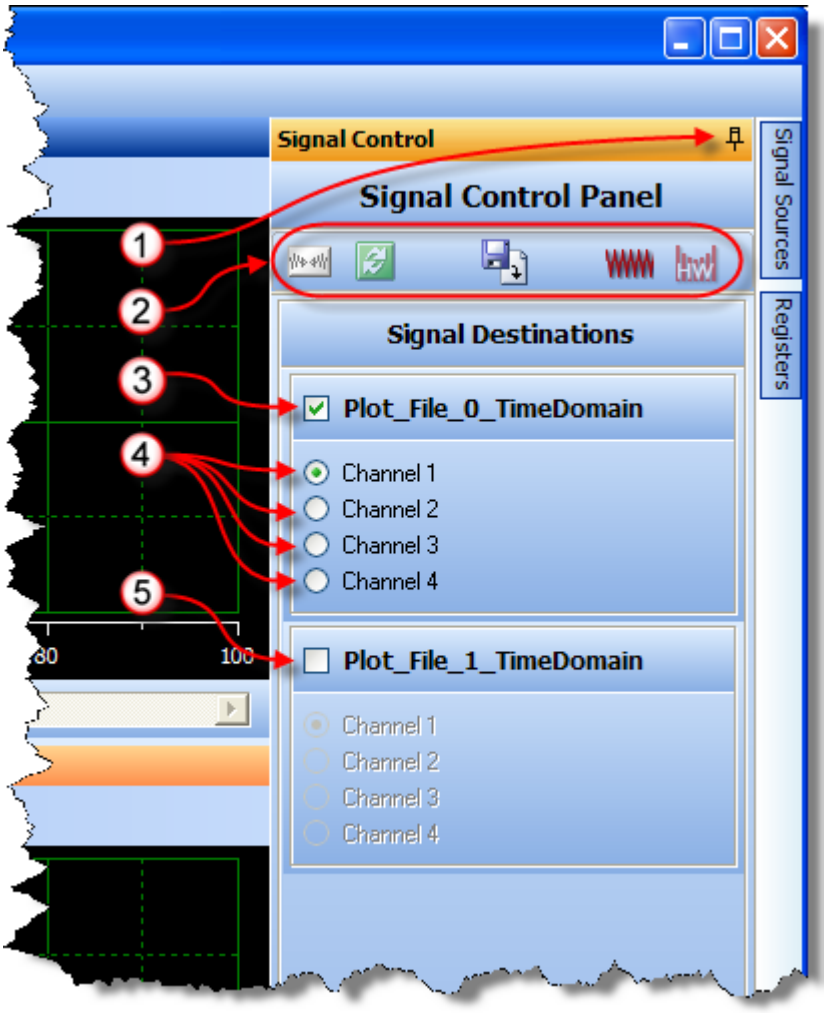
15 – Amplitude

Sets the signal amplitude.

16 – Coherent

Sets the signal generator frequencies to coherent values.

4.1.1.7 - Signal Control Tab



1 - Tab pin

Click on this pushpin icon to pin open the tab.

2 - Toolbar buttons

These buttons are identical to the buttons of the same name on the Main Toolbar.

3 - Plot selection

When this checkbox is checked future data acquisitions are routed to the associated plot. Each plot that is currently open will be represented on this tab.

4 - Plot channel selection

Acquired data is routed to the selected channel.

5 - Plot selection (unselected)

This plot has not been selected as a destination for data acquisition, so its channel selectors are disabled. Checking this box will enable the channel selection buttons.

4.1.1.8 - Registers Tab

Many Evaluation Boards and Reference Boards implement features which are controlled via registers. When an Evaluation Board or Reference Board which requires you to set register values is attached to the PC (via Data Capture Board), the registers tab is displayed. The contents of the panels opened by this tab vary depending on the board you're using.

Two types of register controls may be provided:

1. Level 1 registers
2. Level 2 registers

Level 1 register controls provide direct access to the hardware registers, while Level 2 registers provide a higher level view of the registers.

4.1.1.8.1 - Level 1 Registers

Level 1 register controls provide direct read and/or write access to registers. Please see that part of datasheet for more specific register information. Register values are displayed as binary, hexadecimal and decimal values.

Clicking on a bit in the binary value toggles the bit and updates the hex and decimal edit fields. If you've changed a value, it is displayed in red and the register 'Write' button is enabled. Unchanged values are displayed in black. If a register is read-only, the write button will be disabled and its label will display 'Read Only. Likewise, if a value is write-only the read button will be disabled and its label will display 'Write Only (illustrated below).

1 - Read register

This button is labeled 'Write Only' because the register is a write-only register. If this register were readable, the button would be labeled 'Read' and would be enabled. Read buttons are always enabled unless the register is write-only.

2 - Write register

This button will be enabled only if you have changed the register value from its original value.

3 - Register address

This hexadecimal value is the register address. See the datasheet for specific information on register functions.

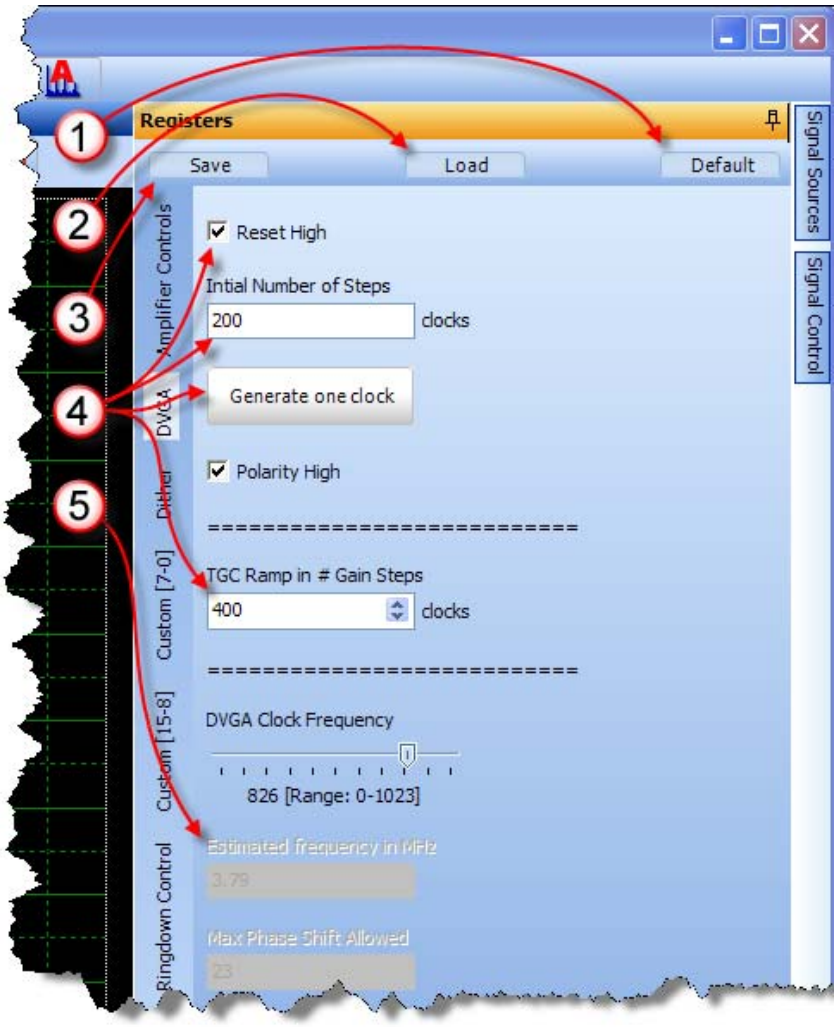
4 - Read register

Here's an example of an enabled read button. Pressing the button will read the current value from the register and update the display.

5 - Write register

This write button is disabled because the register's value has not been changed since it was last read.

4.1.1.8.2 - Level 2 Registers



1 - Default value

Clicking on this button will cause the registers to be reset to their default values.

2 - Load registers

This button will load the register values which you have previously saved to disk.

3 - Save registers

Press this button to save the currently displayed register values to disk.

4 - Level 2 controls

Level 2 registers are standard windows GUI controls.

5 - Disabled controls

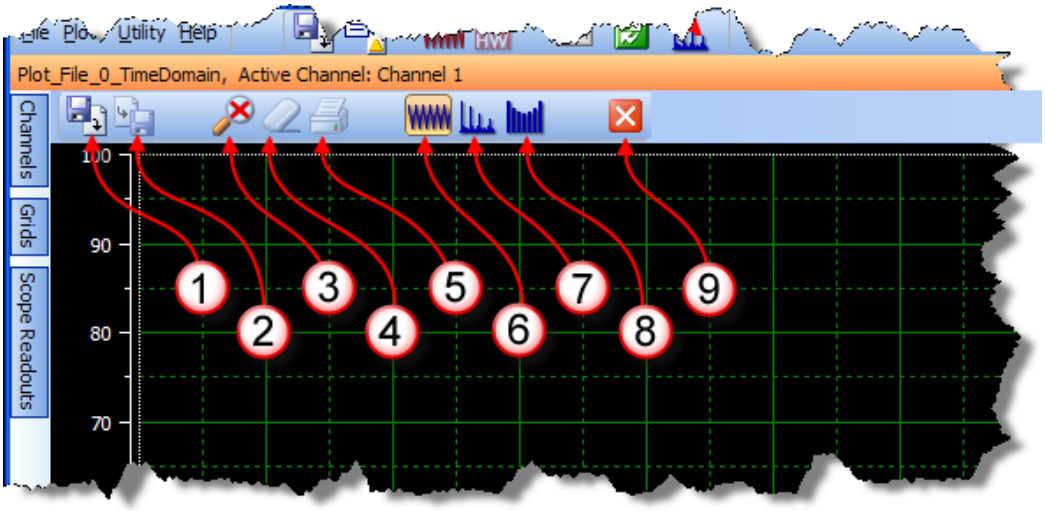
Level 2 register controls may be enabled and disabled based on the values in other registers.

4.1.2 - Plot Controls

Plot Controls are used to provide controls that are specific to a given plot. A few examples of the Plot Controls are listed below:

- Save a plot to disk
- Load a saved plot
- Edit the plot description
- Select the plot type
  - Time Domain
  - FFT
  - Histogram
- Control type-specific values such as FFT window type
- View type-specific statistics
- Close the plot
- Save a channel's data
- Load a channel's data
- Import data into a channel
- Export channel data to an ASCII file
- Print the plot
- Add, remove or edit exclusion areas
- Save an image of the plot in various formats
- Edit the channel's description
- Select the channel's color and line style
- Display or hide the channel's line
- Hide or display on-plot statistics
- Hide or display the cursor readout
- Control the brightness of a channel's line
- Control the plot's background color
- Control the plot's grid line color and style
- Erase all channel's data
- Erase the data for a single channel
- Zoom and pan the plot data
- Add and delete plot annotations

4.1.2.1 - Plot Buttons



1 - Load Plot

The Plot Load dialog is displayed, and the selected plot file is loaded into the new window.

2 - Save Plot

Displays the Plot Save dialog (this button is only active when the plot contains one or more channels with data).

3 - Reset Zoom

Reset X and Y axis zoom to 100%.

4 - Clear

Clear data from all channels.

5 - Print

Print the plot.

6 - Time Domain

Display the plot as time domain data.

7 - FFT

Display the plot as an FFT.

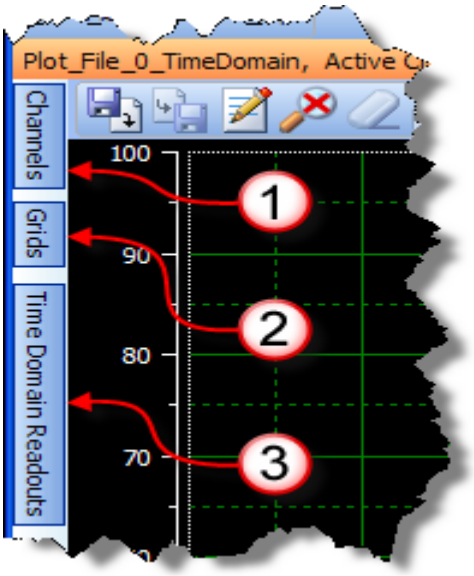
8 – Histogram

Display a histogram of the data.

9 - Close

Close this plot.

4.1.2.2 - Plot Tabs



1 - Channels tab

This tab contains controls used to load, save and configure the display of the 4 plot channels.

2 - Grids tab

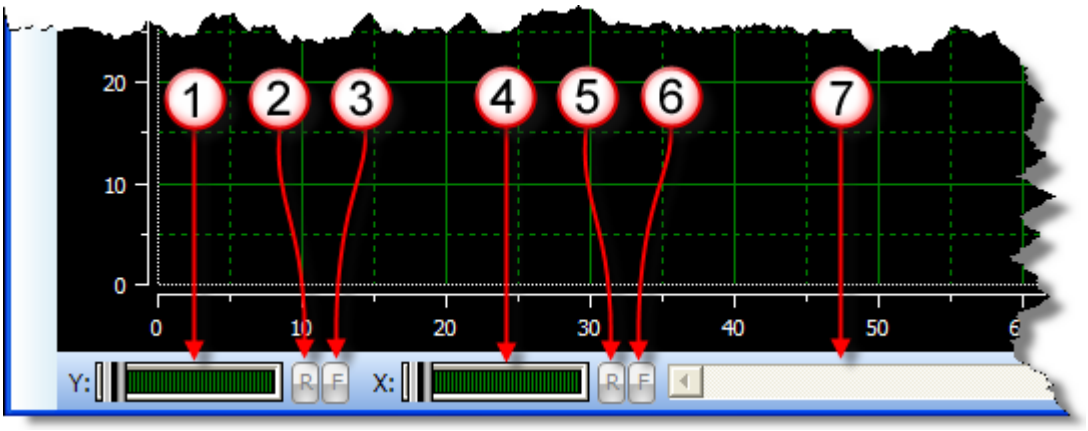
This tab contains controls used to configure the display of the axis labels and plot grid lines.

3 - Readouts tab

This tab contains statistical data relating to the current plot display.

As an example, if you are viewing a Time Domain plot, the readouts tab will contain information about the Time Domain data. If you were viewing a FFT, the tab would contain information about the FFT.

4.1.2.3 - Plot Zoom Buttons



1 - Y Axis Zoom Slider

You may zoom in and out on the Y axis by dragging the slider bar left and right.

2 - Y Axis Reset Button

Press this button to zoom the Y axis to fill the plot to about 90%, leaving a small border above the highest value and below the lowest value.

3 - Y Axis Fill Button

Press this button to zoom the Y axis to fill the plot to 100%, leaving no top or bottom border. For time domain plots, this button zooms the Y axis out to display the full code range of the ADC.

4 - X Axis Zoom Slider

You may zoom in and out on the X axis by dragging the slider bar left and right.

5 - X Axis Reset Button

For time domain data, reset the X axis to display about 10% of the full sample range. For FFT data, reset the axis to display all bins or the full frequency range.

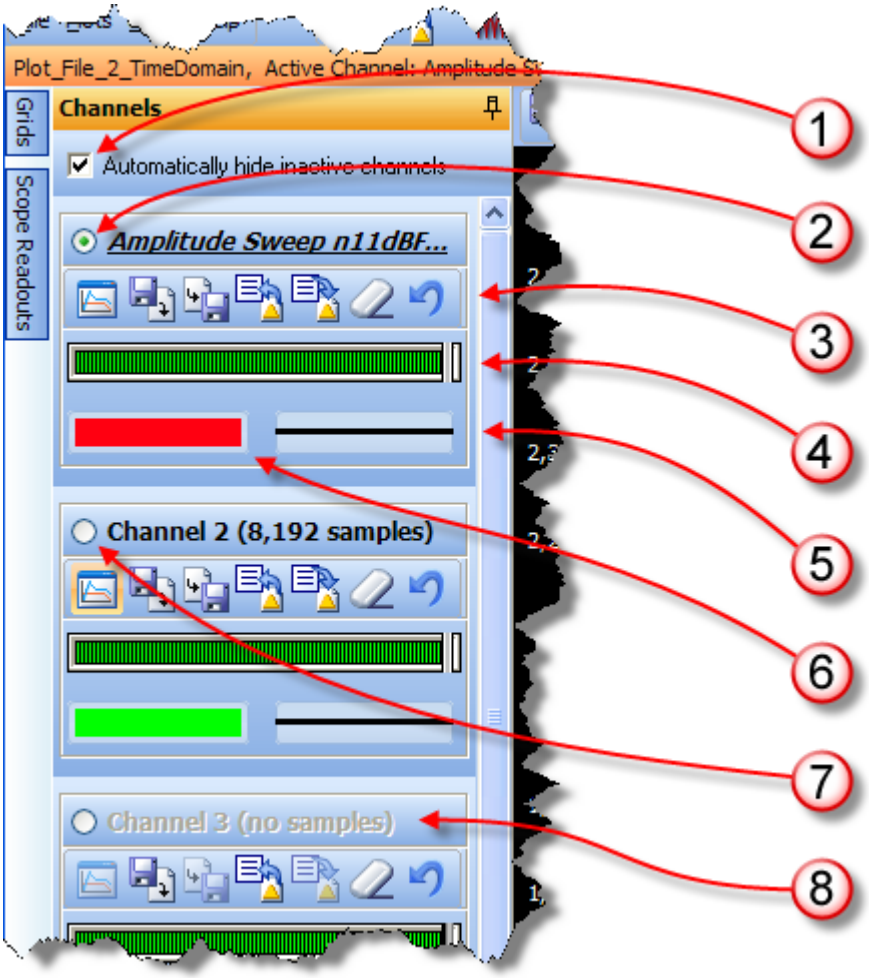
6 - X Axis Fill Button

For time domain data, reset the X axis to display 100% of the full sample range. For FFT data, reset the axis to display all bins or the full frequency range.

7 - X Axis Scroll Bar

Drag the scroll bar thumb left and right to reposition the data within the plot window.

4.1.2.4 - Channels Tab



1 - Hide Inactive Channels

If more than one channel contains data, you may wish to see only the active channel's data displayed or you may wish to see all of the channels at once. If this box is checked, only data from the active channel is displayed. Pressing the '0' key on the keyboard will toggle this checkbox.

2 - Active Channel

The channel with the checked radio button is the active channel. When a channel is active, its title is displayed in italics and it is displayed on 'top' of any other channels on the plot. You may press the '1', '2', '3' or '4' keys to make the corresponding channel active

3 - Toolbar

The toolbar contains several controls, explained in detail below.

4 - Brightness Slider

This slider allows you to adjust the brightness of the channel's plot line.

5 - Color Picker

Clicking on this button will open the color picker, which allows you to select the channel's plot color.

6 - Line Style

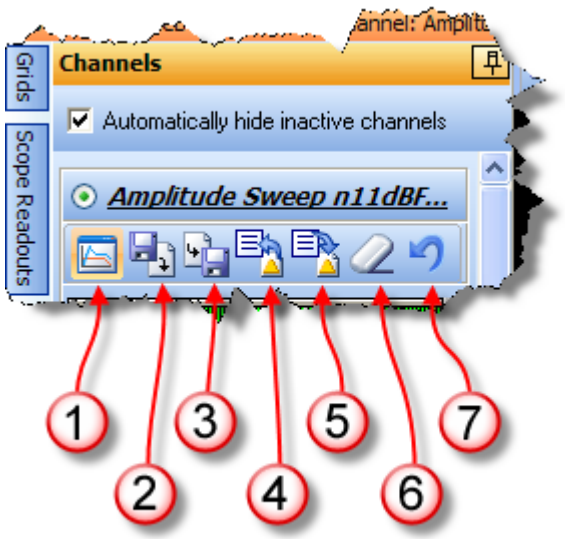
Press this button to select the channel's plot line style.

7 - Inactive Channel

Although this channel contains data, we can tell that it is not the active channel because it's radio button is unchecked and it's title is not italicized. Data for inactive channels is not displayed if the 'Hide Inactive Channels' checkbox (item 1 above) is checked.

8 - Disabled Channel

This channel is disabled because it contains no data. The 'Load Channel Data' and 'Import ASCII Data' buttons are enabled so data may be loaded from disk.



1 - Channel Visible Toggle

When this button is toggled on (pressed), the line for this channel will be visible on the plot. When it is toggled off (not pressed) the line for this channel will not be visible.

2 - Load Channel Data

Pressing this button will open the Channel Load Data dialog which allows you to load data into this channel.

3 - Save Channel Data

Pressing this button will open the Channel Save Data dialog which allows you to save this channel's data and settings to a file.

4 - Import ASCII Data

Pressing this button will open the Channel Import Data dialog, from which you can import ASCII format numeric data.

5 - Export ASCII Data

Pressing this button will open a standard Windows save dialog so you can save the channel's data to an ASCII file

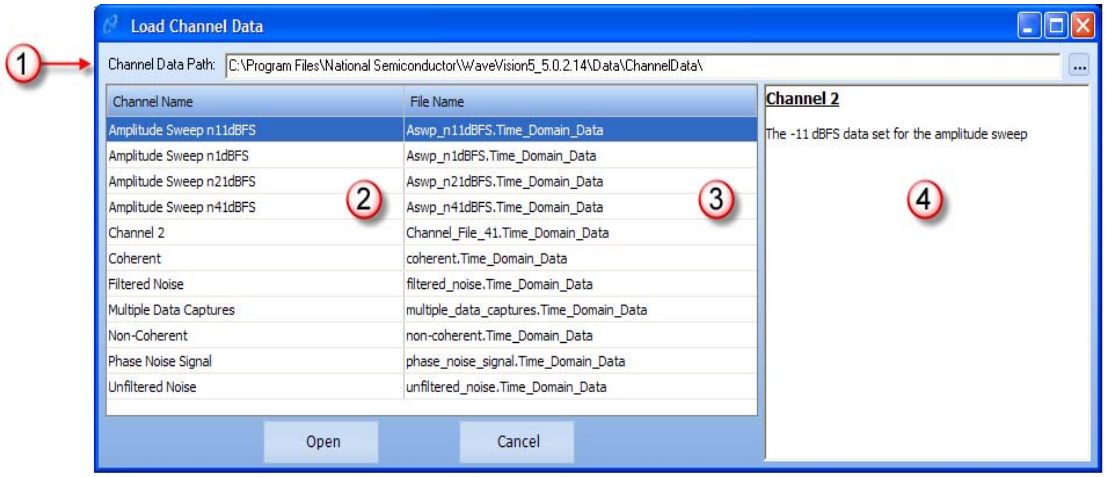
6 - Clear Data

Pressing this button will delete all data points from the channel.

7 - Reset

Pressing this button will reset the channels color and line styles to their original values.

4.1.2.5 - Channel Load Dialog



1 - Channel Data Path

By default, the Open Channel Data File dialog uses the Channel Data directory created when WaveVision 5 was installed. You may type or paste a new path here, or use the ellipsis button to the right of this field to browse to a different directory.

2 - Channel Name Section

This section of the dialog displays the descriptive name of the channel.

3 - Channel File Name Section

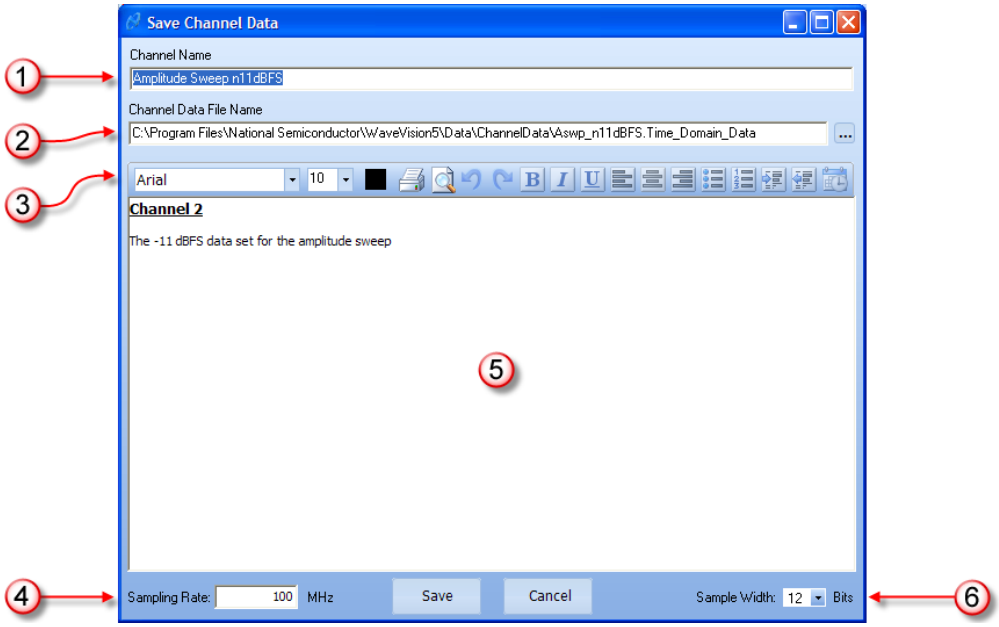
This section of the dialog lists the the file name in which the channel data is stored.

4 - Channel Notes Section

This section displays the notes that you entered for this specific channel.

Note:
Channels are named and their notes are entered when saving a channel, via the Channel Save Dialog

4.1.2.6 - Channel Save Dialog



1 - Name

Enter a descriptive name of the channel in this field. This name will be shown in the Channel Load Dialog.

2 - File Name

You may type or paste a new file name here, or use the ellipsis button to the right of this field to browse to an existing file.

3 - Notes Editor Toolbar

This is a simple word-processor style toolbar which you can use to format your notes.

4 - Sampling Rate

Use this field to enter the sampling rate at which the data was acquired. If the data is acquired from a hardware or a software signal generator, this field will be set correctly and disabled. If the sample data was imported from another application, then this field may be set incorrectly.

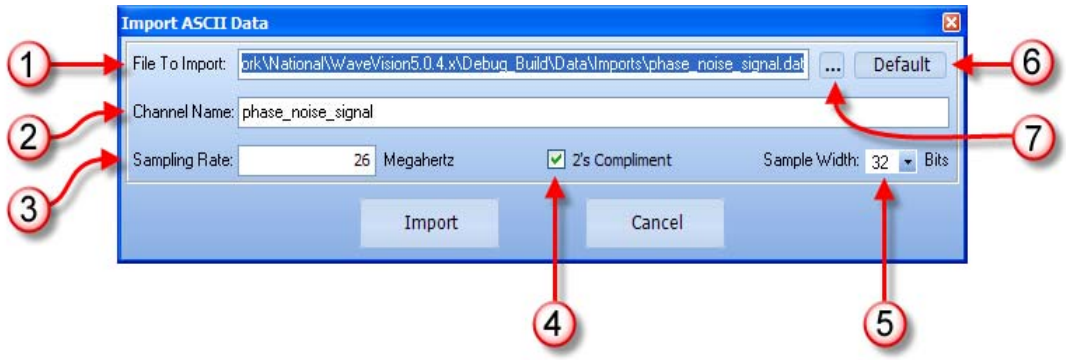
5 - Notes Editor

Use this editor to enter notes to describe the data in this channel.

6 - Sample Width

Use this field to enter the width of the sample data in this channel. If the data is acquired from a hardware or a software signal generator, this field will be set correctly and disabled. If the sample data was imported from another application, then this field may be set incorrectly.

4.1.2. 7 - Data Import (ASCII data) Dialog



1 - File Name

Enter the name of the file you wish to import.

2 - Channel Name

This is the name that WaveVision 5 will display for this channel (optional).

3 - Sampling Rate

This is the rate at which the signal was sampled when the data was acquired.

4 - 2's Compliment

Check this box if the data is in 2's compliment format.

5 - Sample Width

Enter the number of bits of the hardware which acquired the data.

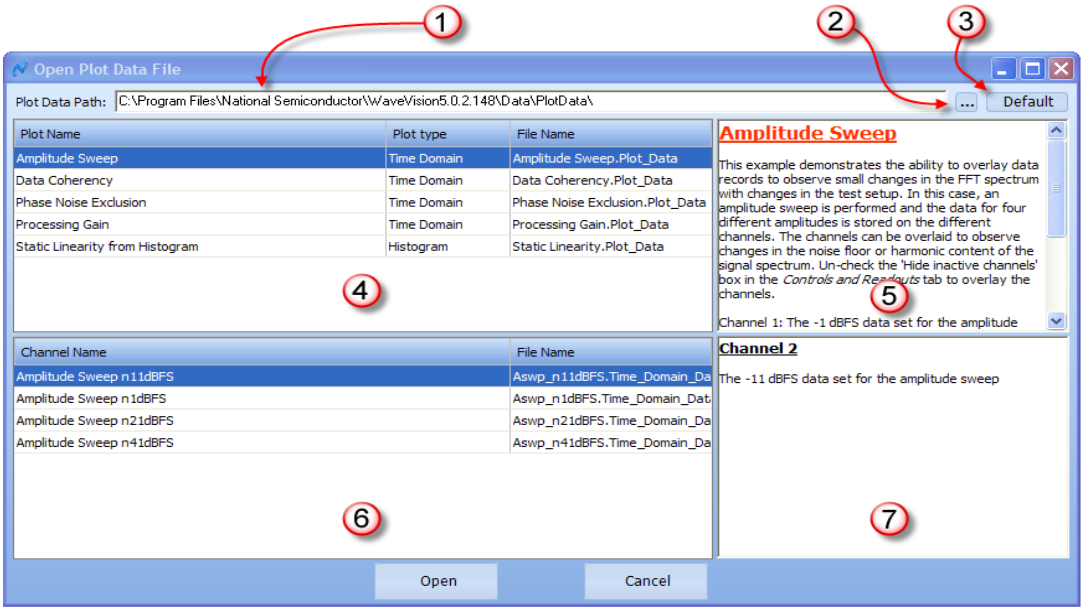
6 - Default Directory

This button resets the import directory to the program's default import directory.

7 - Browse Button

This button will open a standard Windows file open dialog so you can browse for the input file.

4.1.2.8 Open Plot Data File Dialog



By default, the Open Plot File dialog uses the PlotData directory created when WaveVision 5 was installed. The dialog lists the plot files it finds in the PlotData directory.

1 - Path

Enter or browse for the path to your plot data files.

2 - Browse Button

Click this button to browse to a new directory path.

3 - Default Path Button

Click this button to return to the default plot data directory.

4 - Plot Name Section

For each plot file, this section lists the name of the plot, the plot type (either Time Domain or Hardware Histogram) and the file

5 - Plot Notes Section

When you select a plot file, this section of the dialog displays the notes you saved with that particular plot.

6 - Channel Name Section

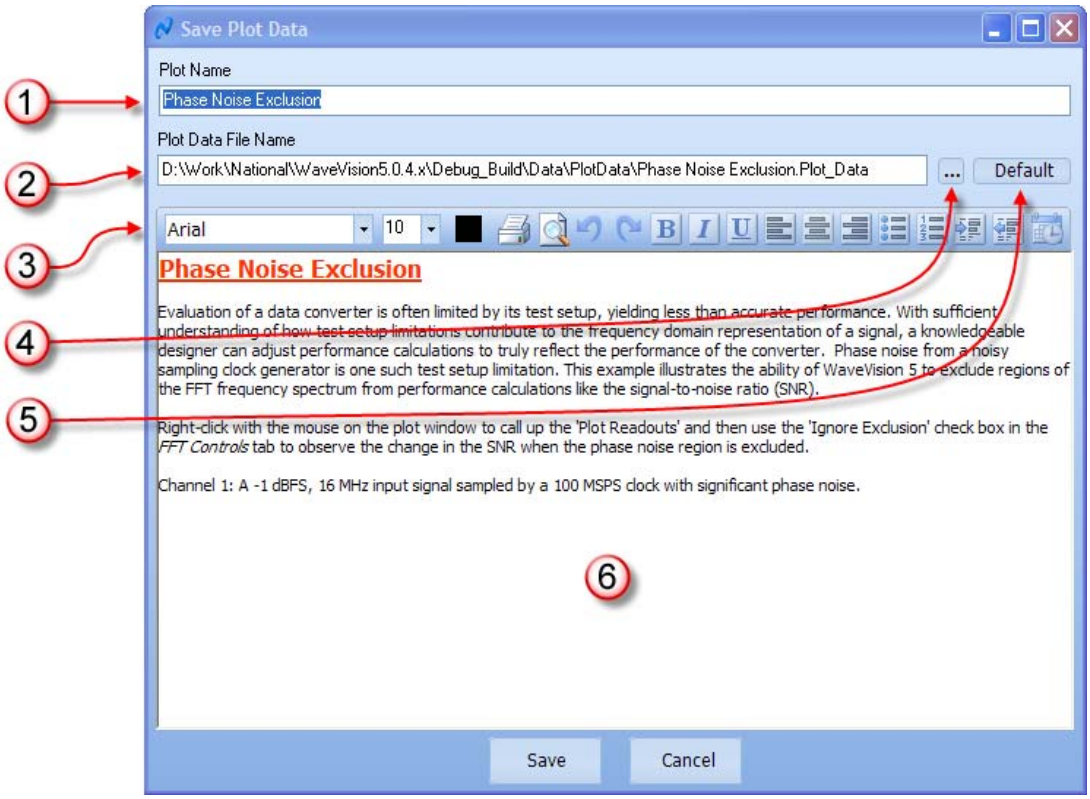
This section of the dialog lists the channels which comprise the plot selected in section 1.

7 - Channel Notes Section

This section displays the notes that you entered for the selected channel.

NOTE:
Plots are named and their notes are entered when saving the plot, via the Plot Save Dialog. Channels are named and their notes are entered when saving the channel, via the Channel Save Dialog

4.1.2 9 - Save Plot Data Dialog



1 - Plot Name

Enter the name that WaveVision 5 will associate with this plot.

2 - File Name

Enter the name of the file you wish to load

3 - Notes Editor Toolbar

This is a simple word-processor style toolbar which you can use to format your notes.

4 - Browse Button

This button will open a standard Windows file save dialog so you can browse for the output directory.

5 - Default Directory

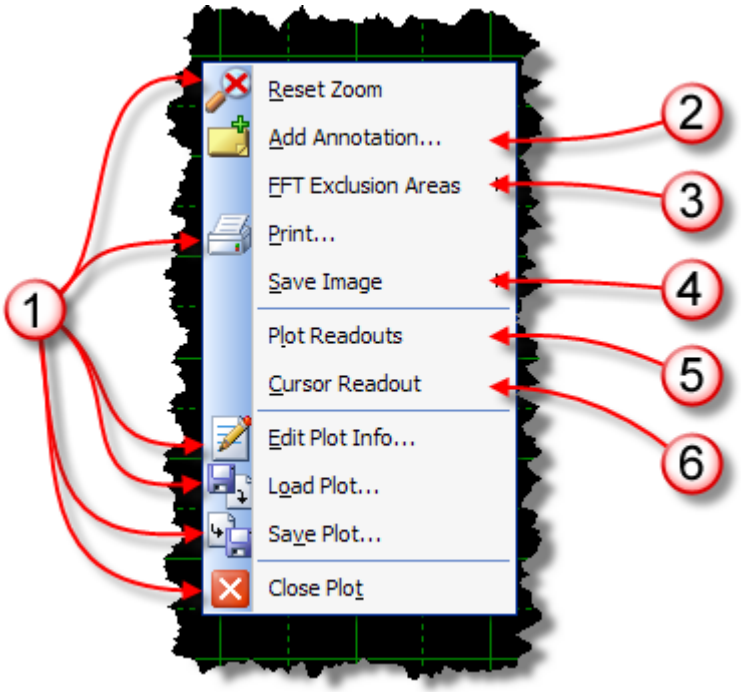
This button resets the plot directory to the program's default plot directory.

6 - Plot Notes Section

Here you may type any information or notes you wish to associate with the plot. Use the toolbar to format the notes as desired.

4.1.2.10 - Plot Context Menu

You may right-click the mouse with the cursor over the plot in order to open the context menu.



1 - Toolbar Controls

These items are shortcuts to various items on the plot toolbar.

2 - Add Annotations

This item opens the annotation editor so you may annotate your plot.

3 - Exclusion Areas

This sub-menu allows you to create and manage exclusion areas, bands on the plot whose data will be excluded from FFT calculations.

4 - Save Image

Click on this item to save an image of the plot in one of 4 different formats.

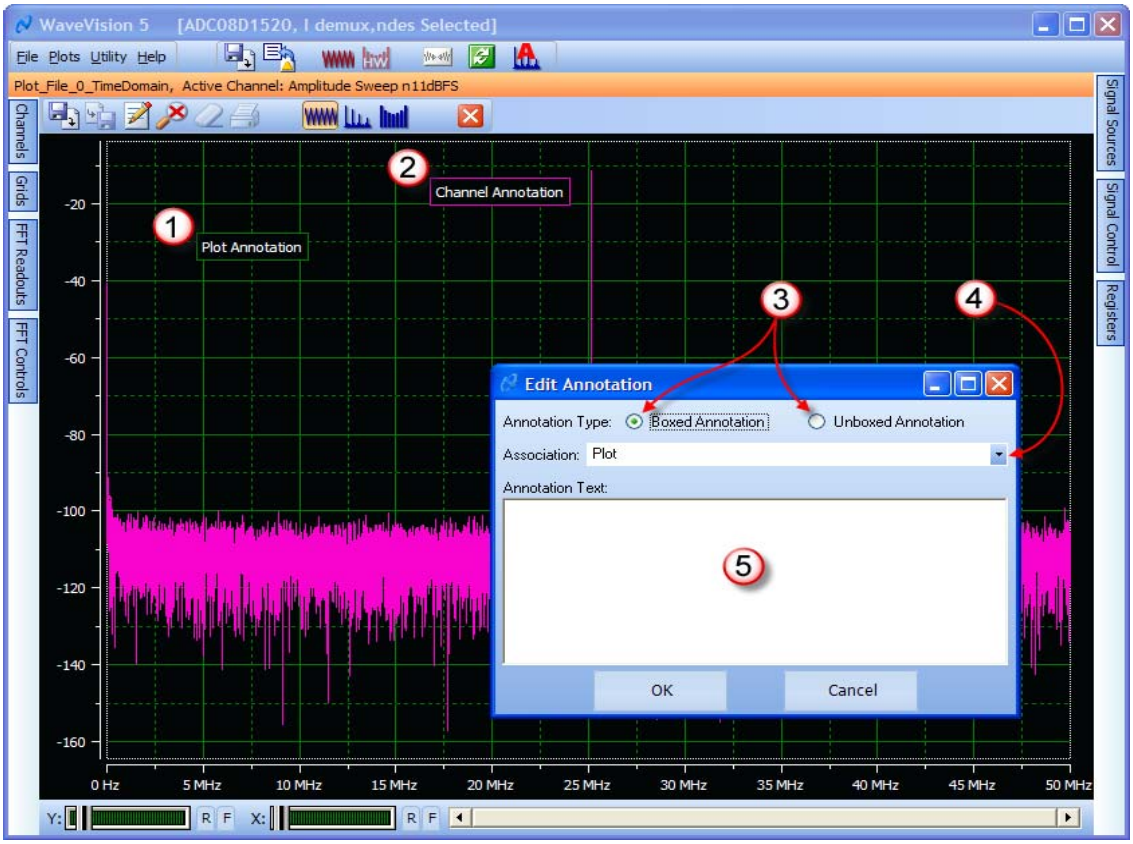
5 - Plot Readouts

This item toggles the plot readouts panel on and off.

6 - Cursor Readouts

This item toggles the cursor readouts panel on and off.

4.1.2.11 - Plot Annotations



You may annotate your plots with two different types of annotations:

1. Plot annotations
2. Channel annotations.

Plot annotations stay in the same position regardless of how the plot is scrolled or zoomed. Channel annotations are relative to the channel data. As you scroll the data or zoom the plot, the annotation will stay in the same position relative to the plot data. Channel annotations may not be visible if the data point they are associated with is not displayed on the screen.

Channel annotations border color is the same as the color of the channel's plot lines. Plot annotations border color is the same as the plot grid color.

1 - Plot Annotation

An annotation associated with the plot.

2 - Channel Annotation

An annotation associated with the channel data.

3 - Annotation Box

Annotations may be displayed in a box, as shown above, or as plain text without the box.

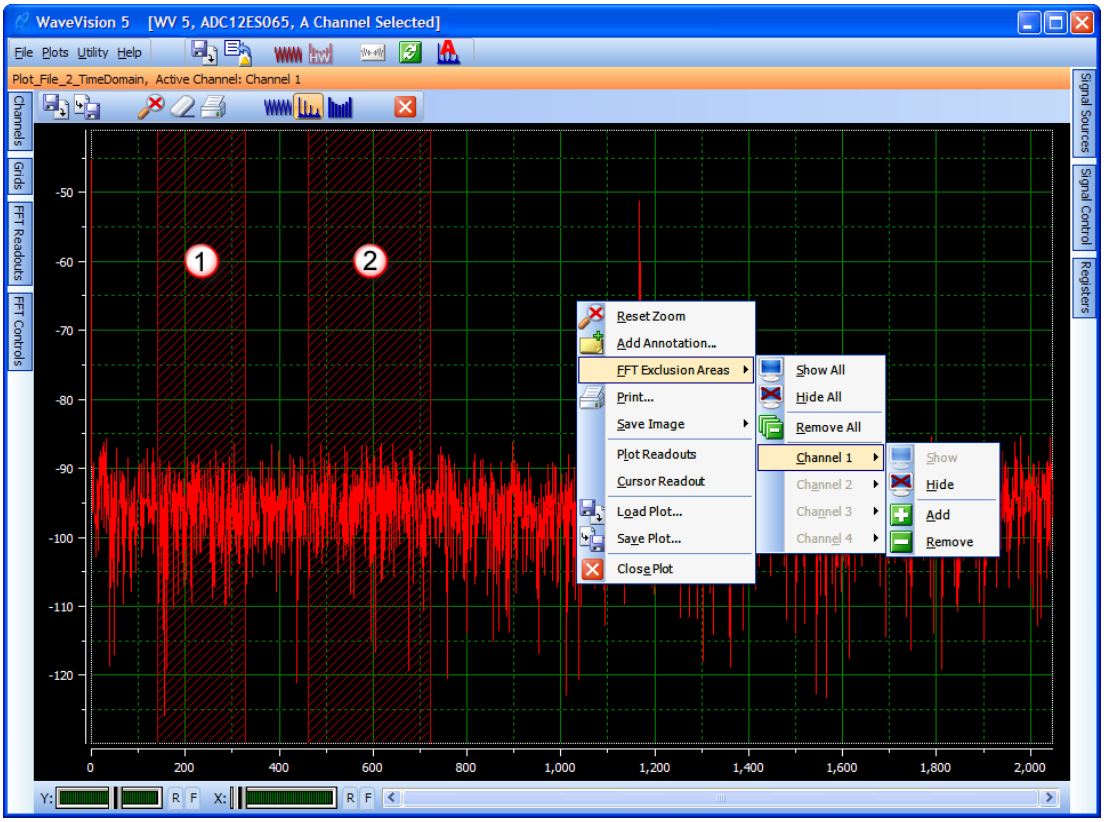
4 - Annotation Association

Use this drop-down list to associate the annotation with the plot, or with any of the 4 channels (channels must contain data before an annotation can be associated with them).

5 - Annotation Text

The text displayed with your annotation goes here.

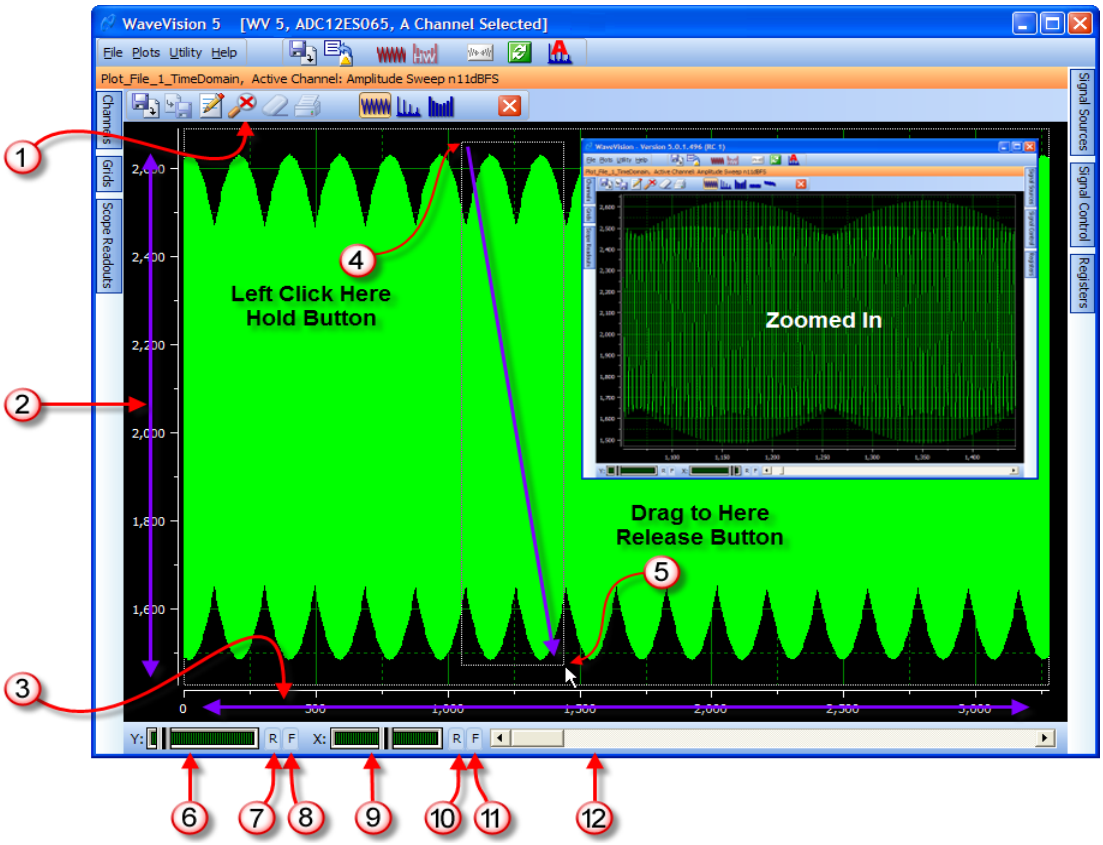
4.1.2.12 - Plot Exclusion Areas



Each plot can contain one or more exclusion areas, drawn as bands as illustrated at 1 and 2 above. Samples falling within an exclusion area are excluded from FFT calculations.

Exclusion areas are managed through the plot context menu as shown above.

4.1.2.13 - Plot Scroll and Zoom Controls



1 - Reset Zoom

This button will reset X and Y axis zoom to 100%. The context menu contains a shortcut to this button.

2 - Y Axis

The Y axis is calibrated in counts for time domain and histogram plots, and in dB for FFT plots. You may drag up and down on the Y axis to reposition the plot vertically.

3 - X Axis

The X axis is calibrated in samples for time domain and histogram plots, and in either bins or frequency for FFT plots. You may drag left and right on the X axis to reposition the plot.

4 & 5 - Zoom Box

You may zoom the plot by drawing a box around the area you wish to zoom in on as illustrated by 4 and 5 above. Move your cursor to 4, then press and hold the left

mouse button while dragging down and to the right until you reach 5. Releasing the mouse button at that point will zoom in on the area as shown in the insert.

6 - Y Axis Zoom Slider

You may zoom in and out on the Y axis by dragging the slider bar left and right.

7 - Y Axis Reset Button

Press this button to zoom the Y axis to fill the plot to about 90%, leaving a small border above the highest value and below the lowest value.

8 - Y Axis Fill Button

Press this button to zoom the Y axis to fill the plot to 100%, leaving no top or bottom border. For time domain plots, this button zooms the Y axis out to display the full code range of the ADC.

9 - X Axis Zoom Slider

You may zoom in and out on the X axis by dragging the slider bar left and right.

10 - X Axis Reset Button

For time domain data, reset the X axis to display about 10% of the full sample range. For FFT data, reset the axis to display all bins or the full frequency range.

11 - X Axis Fill Button

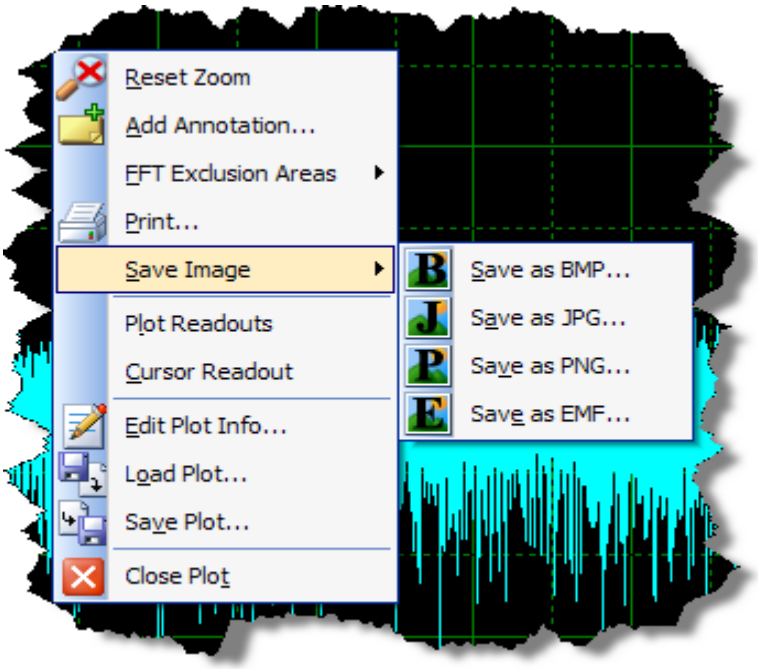
For time domain data, reset the X axis to display 100% of the full sample range. For FFT data, reset the axis to display all bins or the full frequency range.

12 - X Axis Scroll Bar

Drag the scroll bar thumb left and right to reposition the data within the plot window.

4.1.2.14 - Plot Images

Plot images can be saved to Disk in various formats:

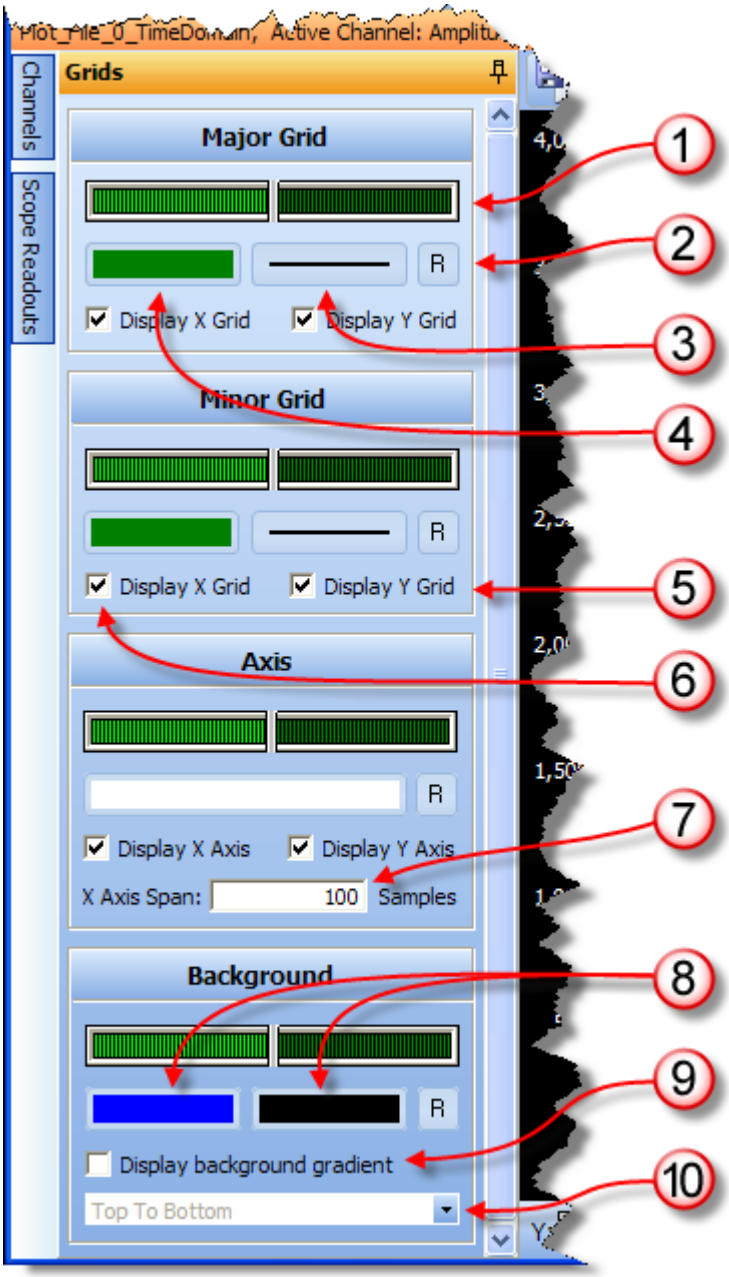


You may save images of the plot to disk in one of four different formats, as illustrated above. BMP, JPG and PNG formats are all bitmap or pixel based, meaning they won't scale well. EMP (enhanced metafile format) is a standard Windows vector based format. This means that the contents of the image are described mathematically which allows the image to scale smoothly. This is the best format to use when you need to include the image in another document.

The bitmap based formats will display the plot exactly whereas the vector format may not.

4.1.2.15 - Plot Grids

Change Grid Line colors & styles:



There are 4 sections on this tab, one for each of the plot elements - major grid lines, minor grid lines, axis color and background color.

1 - Grid Brightness

Controls the brightness of the grid lines

2 - Grid Reset

Resets items in this section to their default values.

3 - Grid Line Style

Selects the line style of the grid lines (solid, dashed, etc).

4 - Grid Color

Opens a color selector which allows you to pick the color of the grid line.

5 - Y Axis Grid Display

Display or hide the Y axis grid lines.

6 - X Axis Grid Display

Display or hide the X axis grid lines.

7 - X Axis Scaling

Scales the X axis to display the specified number of points.

8 - Background Color

The Background section contains two color selectors. The one on the left selects the top color if the gradient box (9) is checked. The on on the right selects the bottom color if the gradient box is checked, or the background color if the box is unchecked.

9 - Background Gradient

Check the box to display the background color as a gradient.

10 - Gradient Selection

This drop-down list contains several gradient styles which you may select.

4.1.2.16 - Plotting

WaveVision 5 can display the data you've acquired, generated, loaded or imported as 3 different plot types.

1 - Time Domain

This is a standard oscilloscope-like display. Here you can see the data captured on your signal-path board in the time-domain.

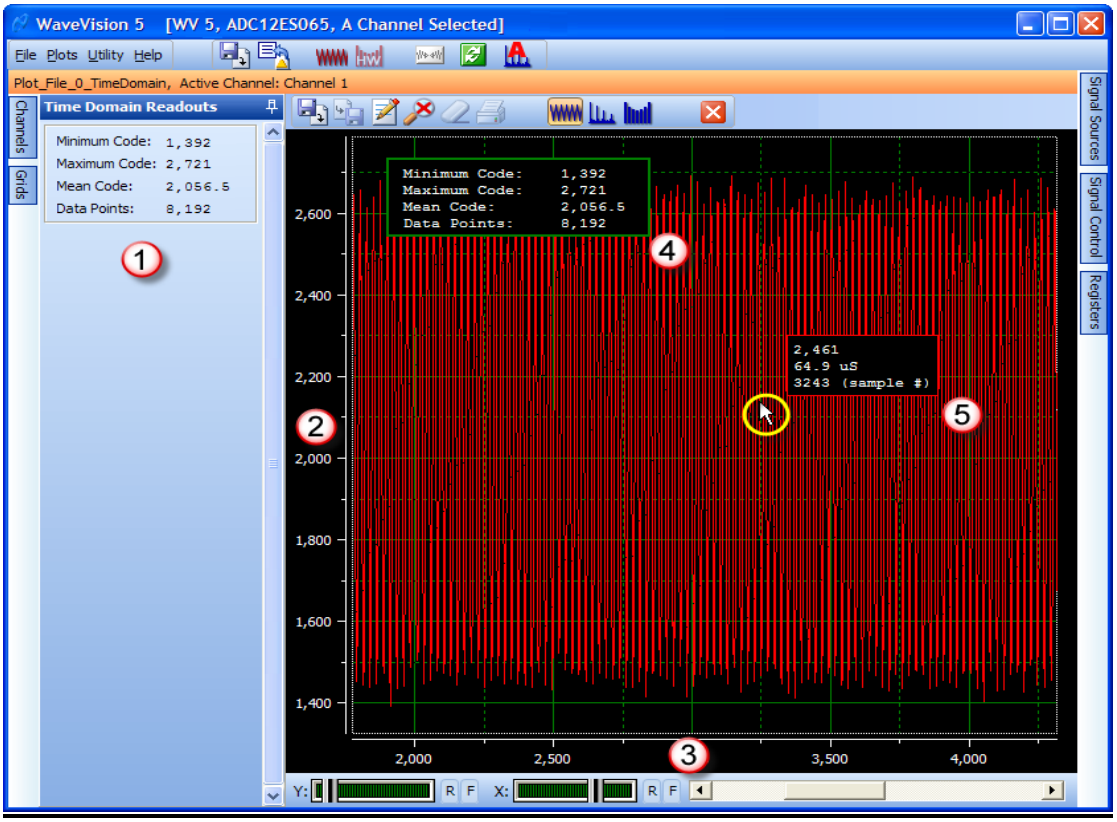
2 - FFT

The FFT displays your captured data in the frequency domain. Several window types are included.

3 - Histogram

A graph showing the distribution of codes within a sample set. The X axis represents possible code values, and the Y axis shows the number of times each code appears.

4.1.2.16.1 - Time Domain (Scope) Plot



1 - Readouts Panel

The time domain readouts panel displays information about the dataset.

2 - Y Axis

The Y axis displays the codes read from the ADC.

3 - X Axis

The X axis displays the sample number.

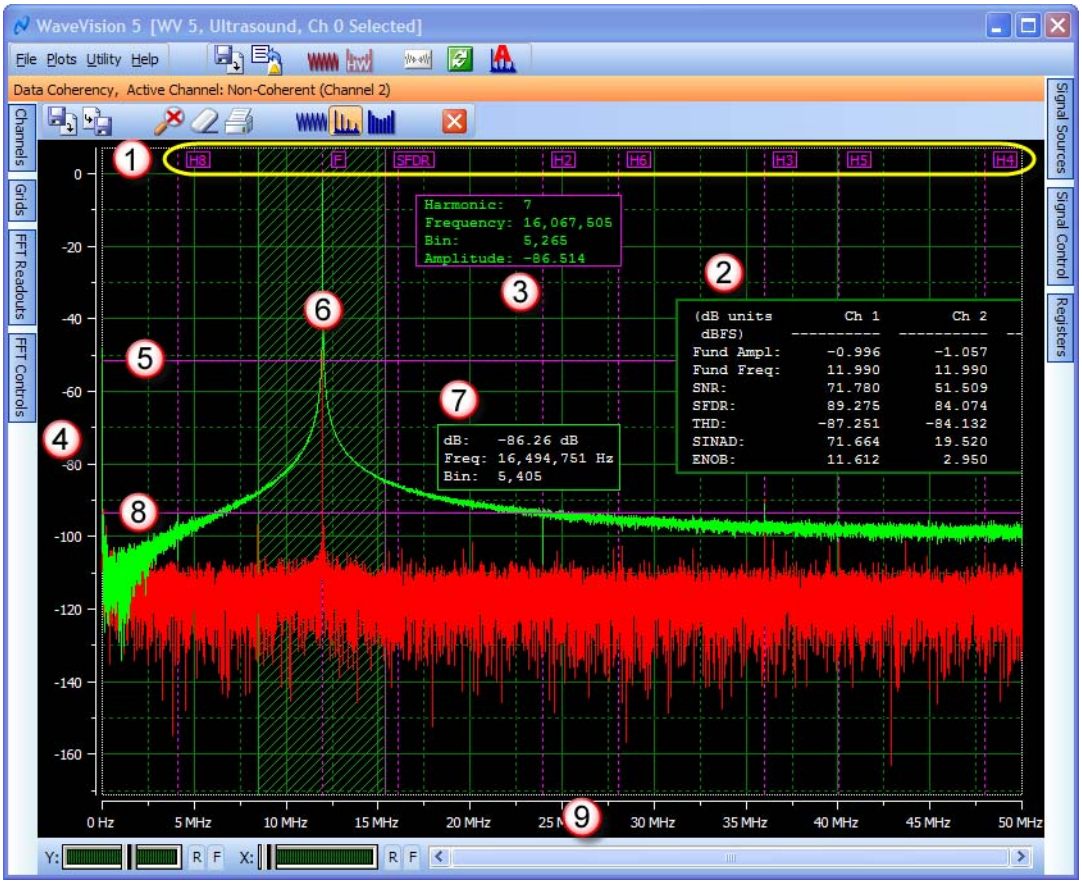
4 - Floating Readouts

This panel displays the same information as the readouts panel (1) above. Use the Ctrl-R key combination to toggle this box on and off, or enable/disable via the context menu.

5 - Cursor Readouts

This panel floats near the cursor and displays information about the sample under the cursor. Use the Ctrl-C key combination to toggle this panel on and off, or enable/disable via the context menu.

4.1.2.16.2 - FFT Plot



1 - Harmonics Markers

These markers (and their vertical dashed lines) are displayed when the Harmonics box is checked on either of the FFT panels.

2 - Floating Readouts

This panel displays some important FFT statistics on a dragable, floating panel on the plot panel. It displays statistics for all 4 channels. Use the Ctrl-R key combination to toggle this box on and off, or enable/disable via the Context Menu.

3 - Harmonic PopUp

This box pops up when the cursor is near one of the vertical harmonic lines on the plot. Notice the position of the cursor (in the yellow circle). When the cursor moves away from the vertical line, this box will close.

4 - Y Axis

The Y axis displays the FFT dB values. The axis may be dragged up and down to change the range in view.

5 - Integrated Noise

This line represents the level of integrated noise. It is only displayed if the Noise box is checked on one of the FFT panels.

6 - Exclusion Area

This band represents data which will be excluded from FFT statistic calculations. Multiple exclusion areas may be specified. You manage exclusion areas from the

7 - Cursor Readouts

This panel floats near the cursor and displays information about the bin under your cursor. Use the Ctrl-C key combination to toggle this panel on and off, or enable/disable via the Context Menu.

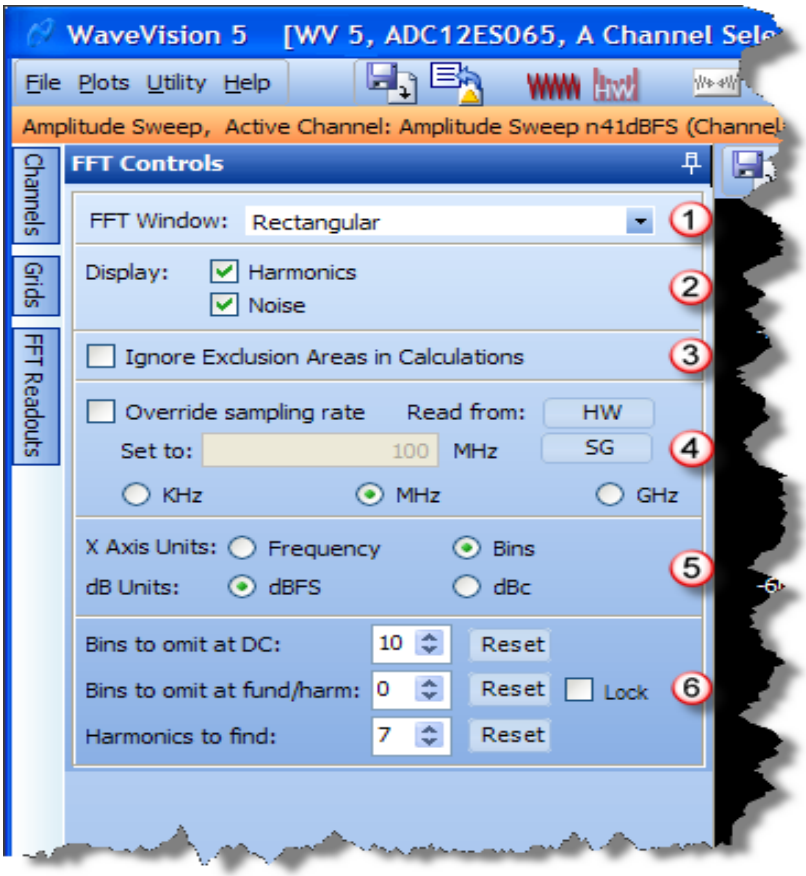
8 - Average Noise

This line displays the FFTs average noise level. It is only displayed if the Noise box is checked on one of the FFT panels.

9 - X Axis

The X axis units are either frequency or bins, depending on the FFT Controls setting (below).

4.1.2.16.2.1 - FFT Control Panel



1 - FFT Window Type

5 familiar windows are provided, as well as 7 optimized cosine variations.

2 - Display

These boxes allow you to control the display of harmonic markers and the two noise lines.

3 - Ignore Exclusion Areas

If this box is checked, exclusion areas will be ignored in calculations. This gives you a quick way to compare your results with and without the exclusions in effect.

4 - Sampling Rate Override

The controls in this section allow you to override the sampling rate read from the hardware. The HW button allows you to reset the sampling rate to the hardware rate, and the SG button allows you to set it to the rate used by the software signal generators.

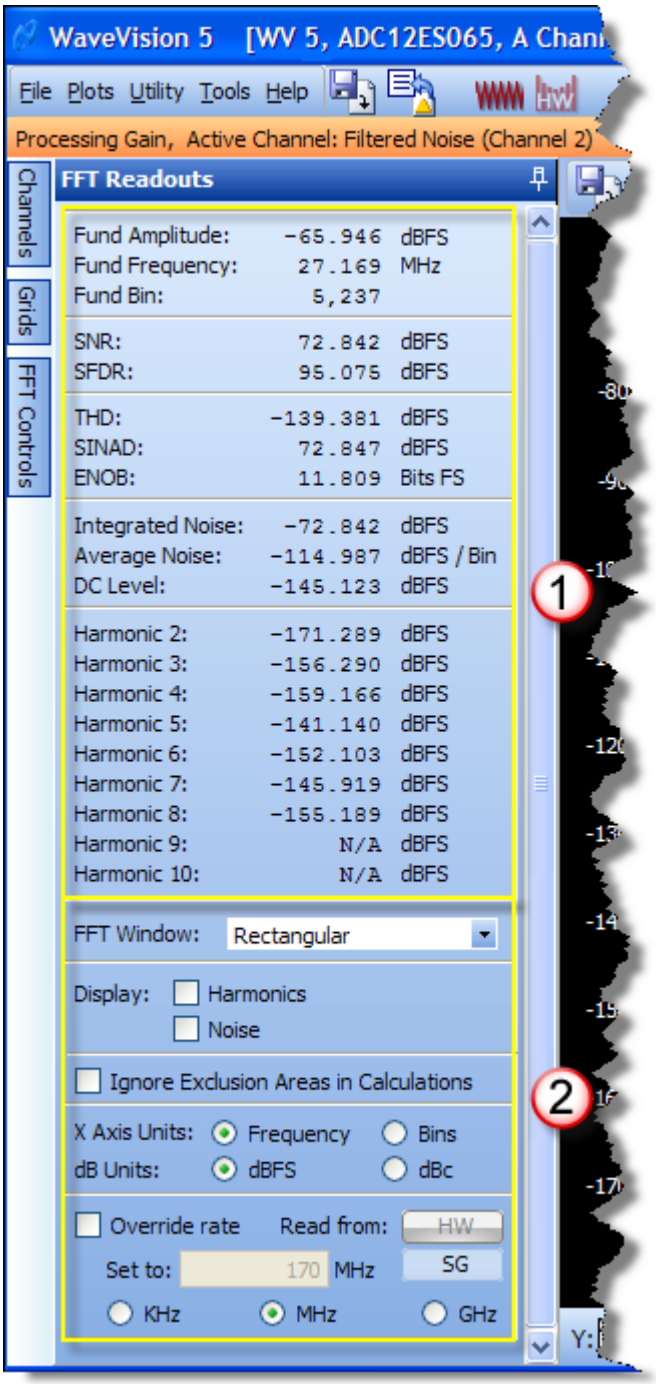
5 - Units

Use these buttons to display x-axis units as frequency or bins, and certain FFT statistics in dBFS or dBc.

6 - Harmonic Count and Bins to Omit

Use the controls in this section to select the number of harmonics to find and display (if enabled in item 2 above), and to select the number of bins to omit from calculations around DC and the fundamental and harmonics. Each FFT window has a default value for the number of bins to omit around the fundamental and harmonics. Use the Lock box to prevent this number from changing as various windows are selected.

4.1.2.16.2.2 - FFT Readout Panel



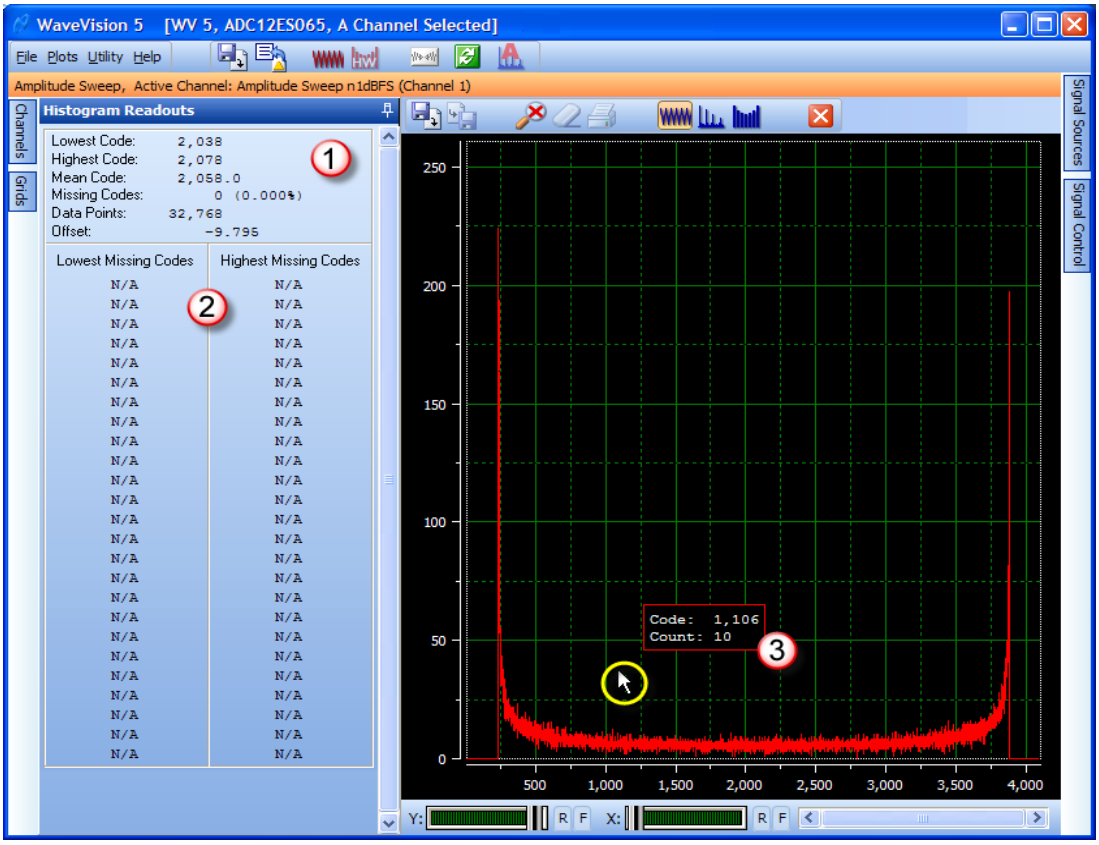
1 - FFT Statistics

In this area you will find calculated information about the FFT. Some of these values can be displayed in either dBFS or dBc, depending on the Units setting as described above. A maximum of 10 harmonics are displayed.

2 - Controls

The controls in this section correspond exactly to those on the FFT Controls panel above. They are reproduced here for convenience.

4.1.2.16.3 - Histogram Plot



1 - Readouts Panel

The histogram readouts panel displays information about the dataset.

2 - Missing Codes

This panel displays up to 25 of the lowest and highest missing codes. Missing codes are codes with a count of zero between the lowest and highest codes.

3 - Cursor Readouts

This panel floats near the cursor and displays information about the bin under your cursor. Use the Ctrl-C key combination to toggle this panel on and off, or enable/disable via the context menu.

5.0 Logging, Errors, and Web Updates

To address the an occasional bug, WaveVision 5 includes three sophisticated capabilities to provide:

1 - Logging

WaveVision 5 is instrumented for both error logging and execution trace logging. These log files gather error messages and, when enabled, program execution trace information to help our developers find and fix the problem fast.

2 – Error Handling

When a program error occurs, WaveVision 5's exception handling system takes over, gathering log files and creating system reports which you can send to our development team from within the program.

3 - Web Updates

WaveVision 5's contains code to automatically or manually check our servers for program updates. When an update is available, the program notifies you, tells you what's changed and offers to download and install the latest release.

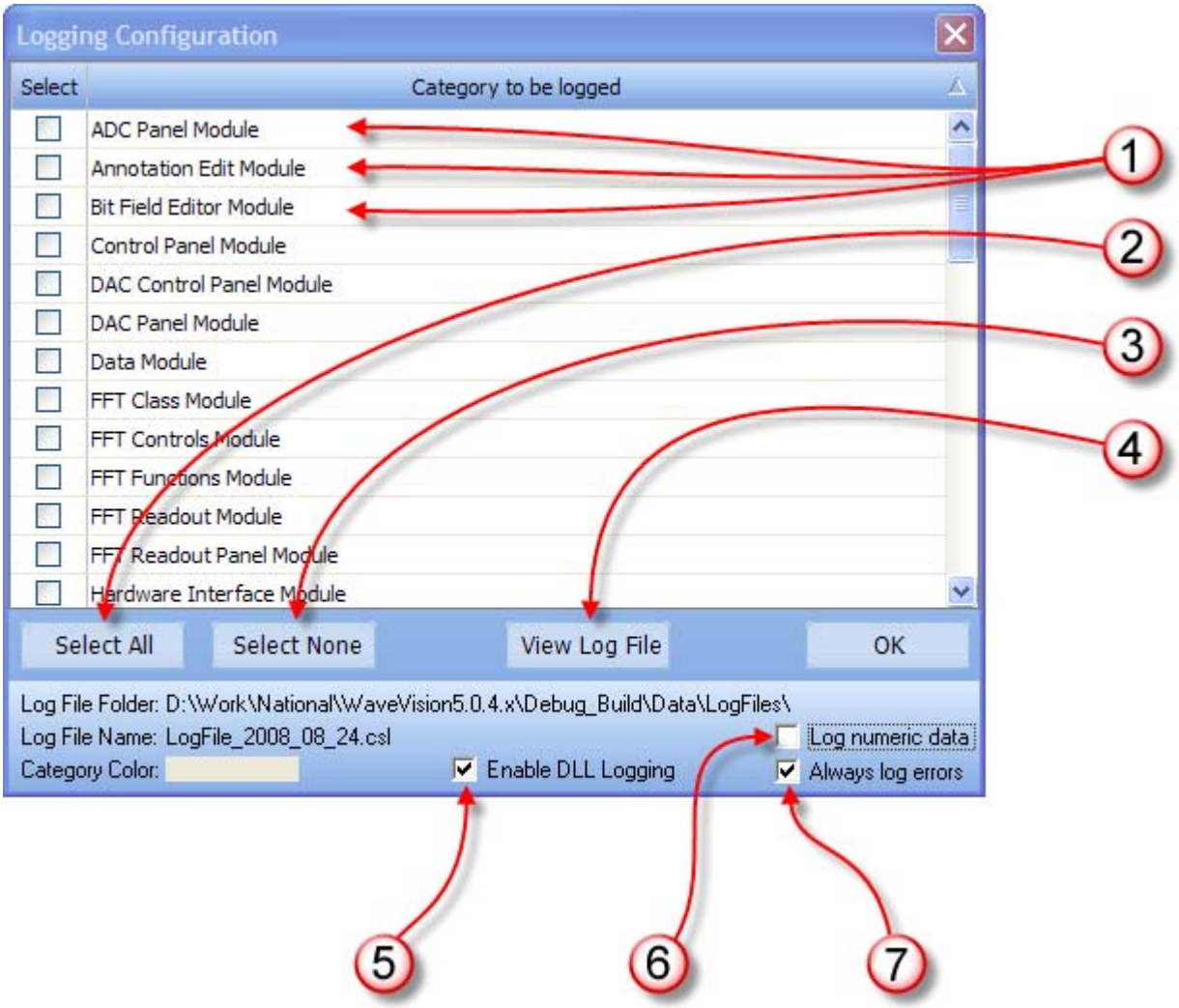
5.1 - Logging

The Error and Trace Logging System

If a program error occurs, we may ask you to enable trace logging and try to reproduce the problem. Error Logging is generally always enabled, but Trace Logging is not since it is only relevant when trying to track down a specific issue.

Both Error and Trace logging are controlled from the Logging Configuration window (illustrated below), accessible from the Utility Menu.

You will notice that there are a large number of logging categories in the main window (4) which may be independently enabled and disabled. There are also three more types of logging denoted by items 6, 7 and 8. Item 8, "Always log errors", should always be enabled.



1 - Categories

The items in this list allow trace logging to be enabled or disabled for individual categories or modules within the program. If we need to see program execution traces for specific modules to help us isolate a problem, we will tell you which modules to enable. Generally, all of these modules should be disabled.

2 - Select All

This button is a shortcut to select all of the logging modules at once.

3 - Select None

This button is a shortcut to deselect all of the logging modules at once.

4 - View Log File

Click this button to view the contents of the log files.

5 - Enable DLL Logging

This box enables logging within the DLL that connects WaveVision 5 to the hardware. It is enabled by default.

6 - Log Numeric Data

Check this box to enable logging of numeric data at various stages within the program.

7 - Always Log Errors

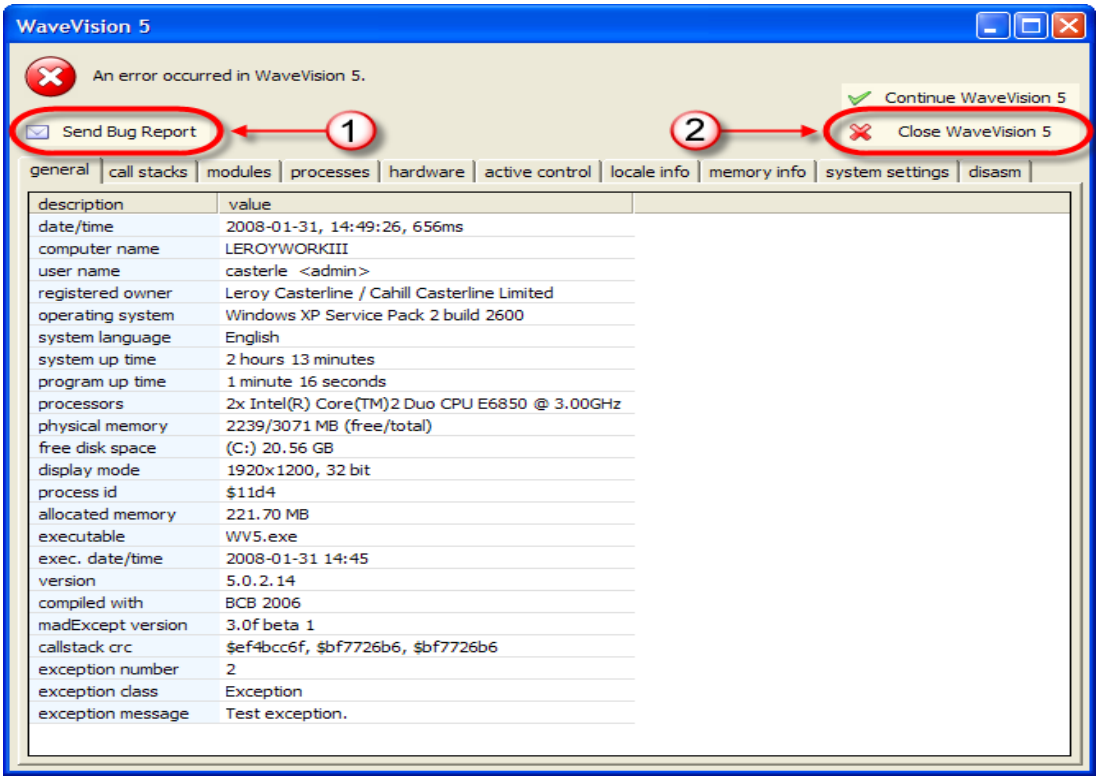
When this box is checked, error messages are logged from all of the categories above, even when they are not selected. This is enabled by default.

Note:
The logging engine must be installed before either error or trace logging is available.

To install the logging engine, select Install Logging from the Utility Menu. The logging engine is NOT installed by default because many applications use it. If it's already installed on your computer, the 'Install Logging' menu item will be disabled.

5.2 - Exception Handling

WaveVision 5 contains a sophisticated exception handling system. If a program exception (an error which cannot be handled by the program internally) occurs, the following window will be displayed.

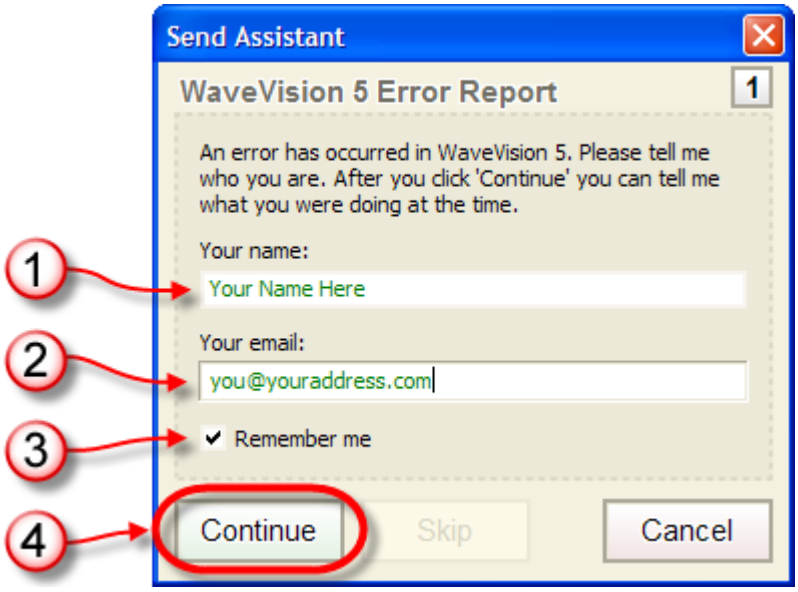


1 - Send Bug Report

Click this button to continue with the error reporting process. The window below will open.

2 - Close WaveVision 5

If an exception occurs, we recommend that you click this button to close WaveVision 5 after you have sent the report. You should only attempt to continue running if you absolutely need to save data you have acquired.



1 - Name

Enter your name here so we know who we need to correspond with concerning this error.

2 – E Mail

We need your email address so we may contact you regarding the error, and let you know when a solution is available.

3 - Remember Me

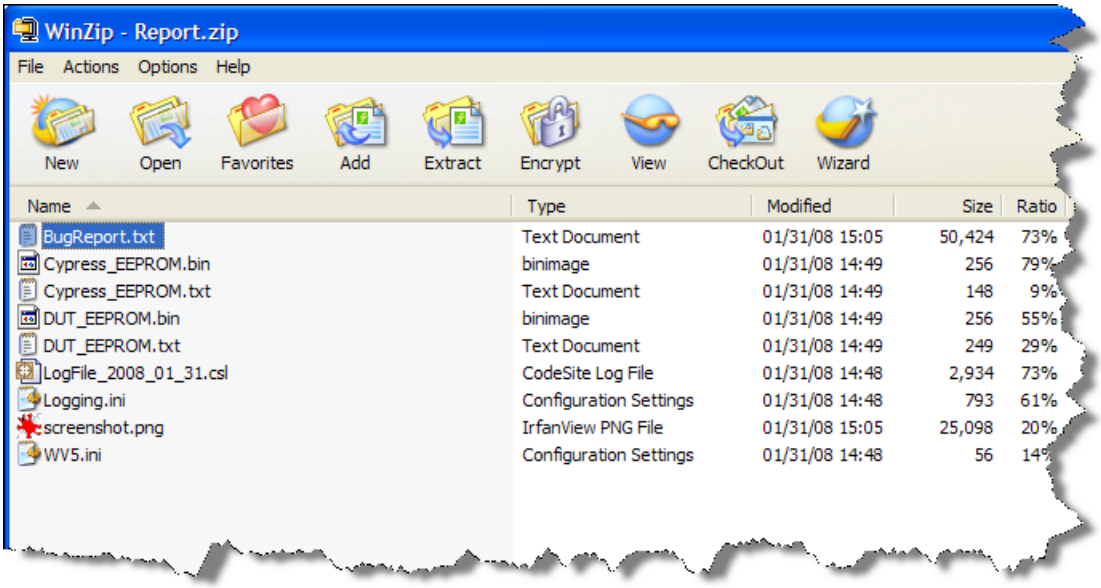
If you check this box, WaveVision 5 will remember your name and email address so you will not have to re-enter this information in the future.

4 - Continue

Press this button to open your email client and send the error report.

Error Report Contents

When you send us an error report, information similar to that shown in the image below will be collected and send with your report. You may inspect this information before you send the report by opening the Report.Zip file.



Briefly, here's what the zip file contains:

1. BugReport.txt is a text version of the information displayed in the exception window at the top of this page.
2. The EEPROM files are the contents of the capture and DUT board EEPROMs (as applicable) in binary and text format.
3. Files ending with .csl are the log files created when Logging is enabled.
4. Logging.ini is the logging configuration file.
5. Screenshot.png is a screen shot of WaveVision 5 at the time of the error. Only WaveVision 5 is included in the screenshot - the rest of your desktop is not recorded.
6. WV5.ini is the WaveVision 5 configuration file.

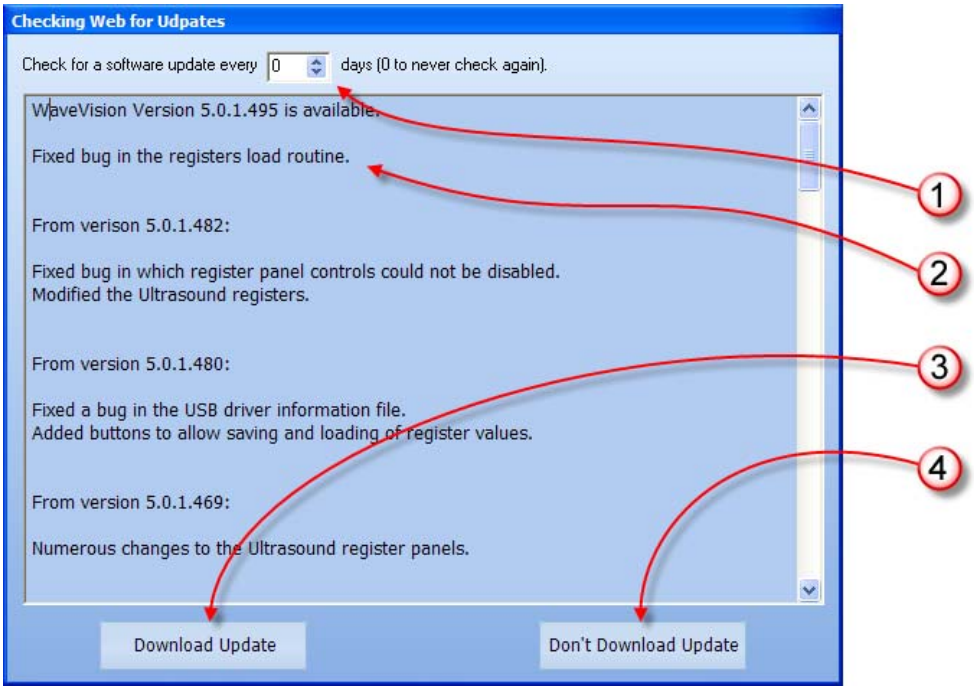
There may be other files included in the report, such as logged numeric data, the DLL log, etc, depending on the attached hardware and your logging configuration.

5.3 - Web Updates

You may have enabled the Web Update feature when you installed WaveVision 5 (recommended). Whether you enabled Web Updates or not, you may quickly and easily check for updates (and enable automatic checks) at any time.

To check for updates manually, click on the 'Check For Updates' item (item 1) on the Utility Menu. To enable automatic updates, set the number of days between checks (item 1 below) to a non-zero value.

When you check for updates, you will see the following window.



1 - Update Frequency

Set the number of days between update checks, or 0 to disable automatic checking.

2 - Update Information

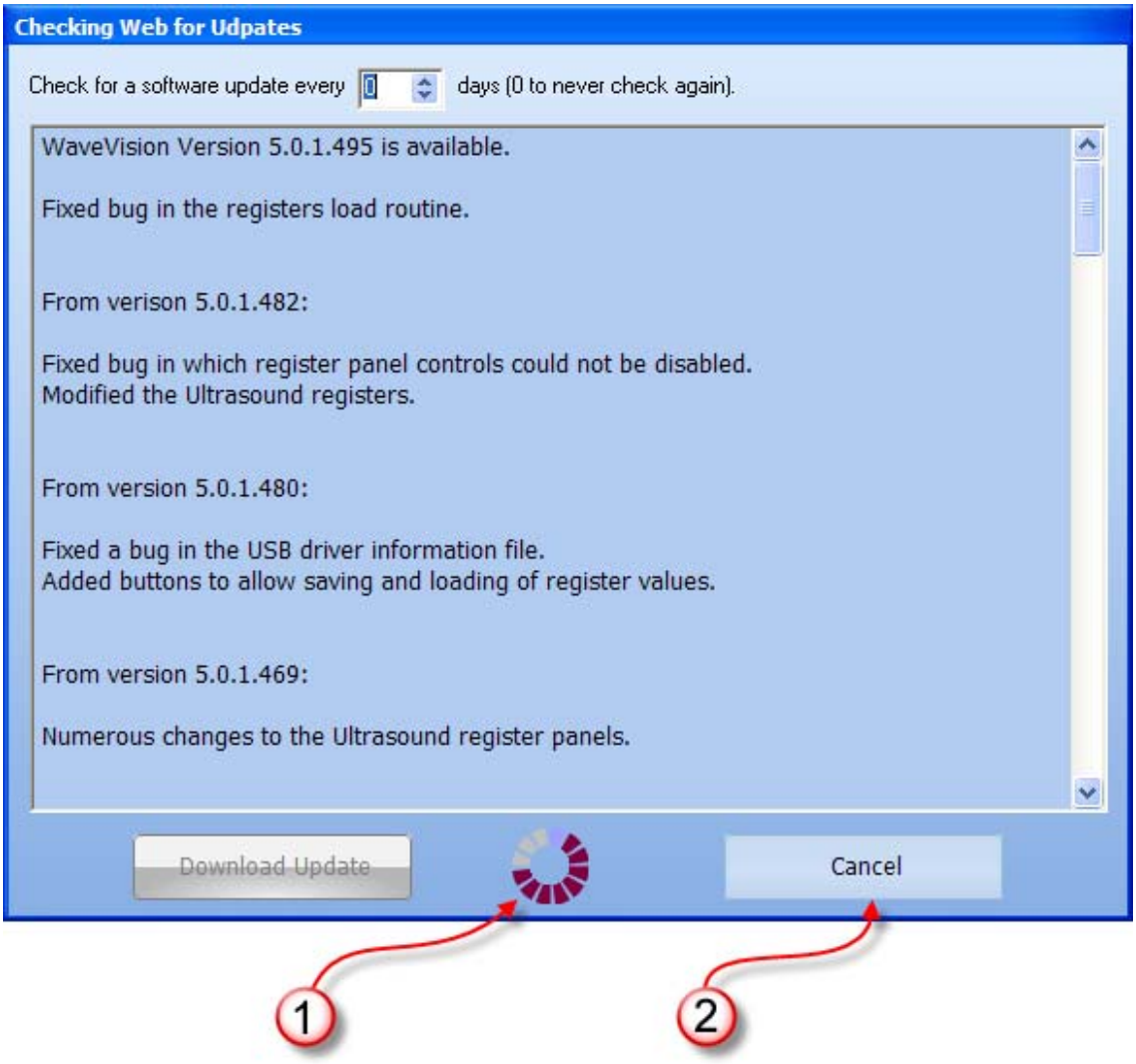
If an update is available, the text will note what has been changed.

3 - Download Update

Click this button to download the update. You will have the option of installing the update immediately, or installing it later.

4 - Don't Download Update

If you don't want to download this update, check this button. You will be able to download the update later if you change your mind.

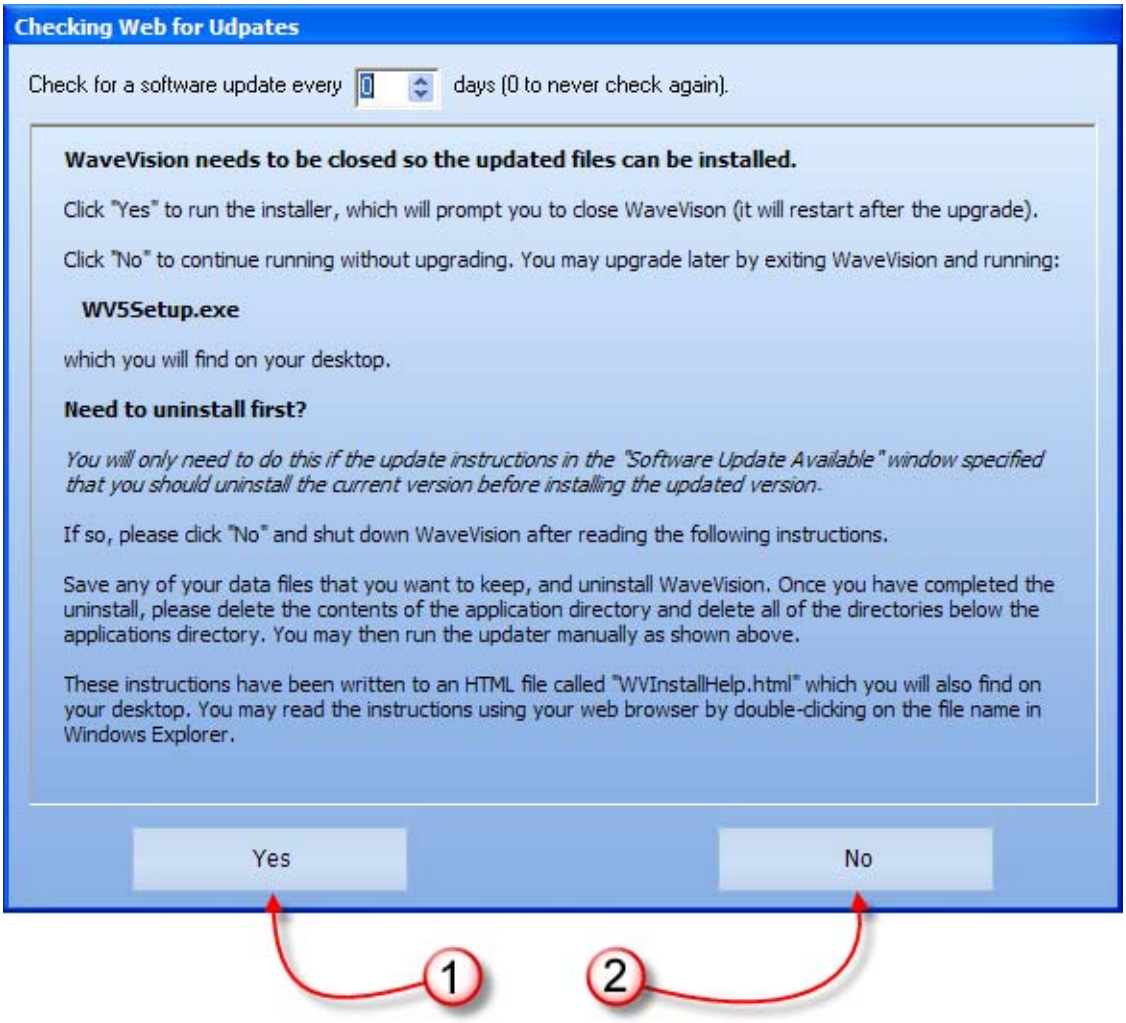


1 - Update Progress Wheel

While the update is being downloaded, this wheel will indicate the progress.

2 - Cancel

Press this button to cancel the download process. You will be able to download the update later if you wish.



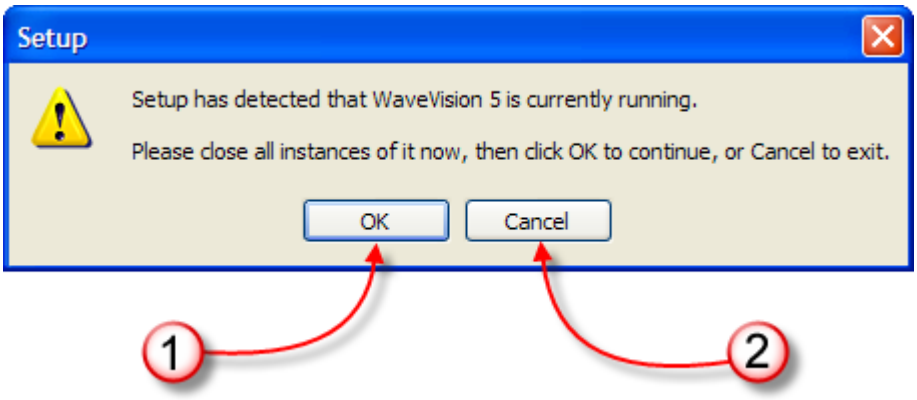
Update instruction page. Please read this information to complete installation of the update.

1 - Yes

Install the update now.

2 - No

Install the update later.



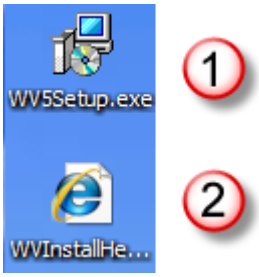
If you elect to install the update on the previous page, but forget to close WaveVision 5, you will see this message.

1 - OK

Click this button after closing WaveVision 5 to continue installing the update.

2 - Cancel

Click this button to install the update later.



If you do not install the update immediately, you will find these icons on your desktop.

1 - Installer Icon

Double-click this icon to run the WaveVision 5 installer.

2 - Instructions Icon

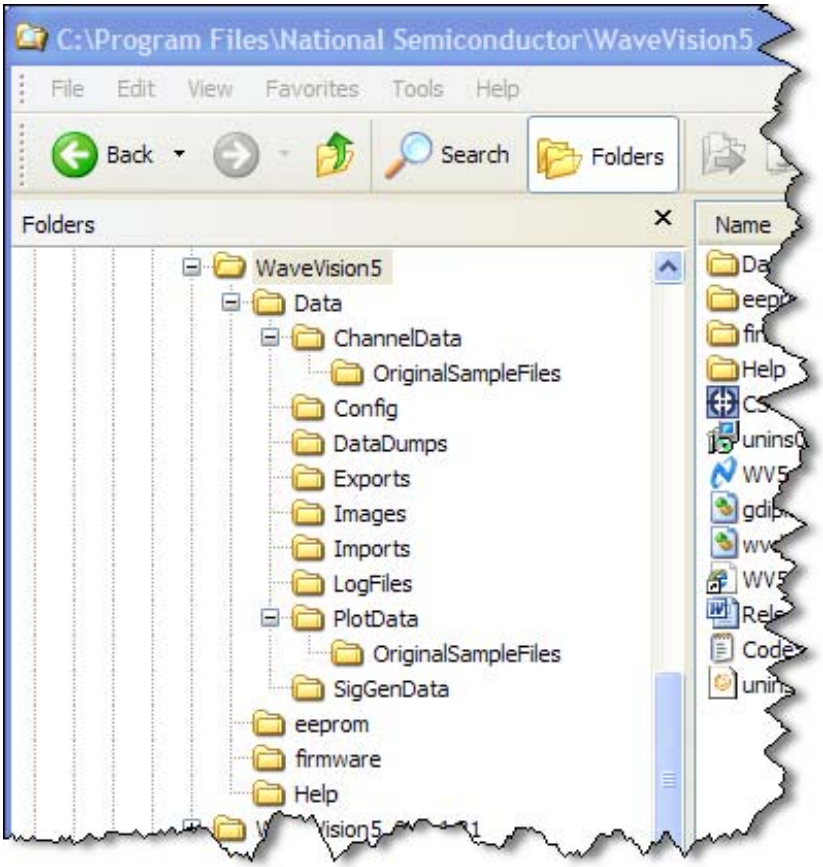
Double-click this icon to review the installation instructions.

Appendix

Directory Structure

There are many folders under the WaveVision5 directory. The folder that is most useful to a user is the Data folder. Data folder has many sub-folders such as LogFiles, (Data) Import, (Data) Export etc. These sub-folders keep or provide important information for a user to manipulate WaveVision 5 software.

The details of the directory structure are shown below:



As indicated above, by default, WaveVision 5 software is installed at location C:\Program Files\National Semiconductor\WaveVision5. Regardless of where WaveVision 5 is installed, the internal directory structure is the same.

The WaveVision5 directory contains the program files (executables and DLLs), the uninstaller, the logging engine, and the release notes. All program configuration information and data files are stored under the Data directory hierarchy.

The ChannelData directory contains the sample data files installed with WaveVision 5, and is where any channel data you save is stored. OriginalSampleFiles contains copies of the sample files, so you can restore them, as needed.

The Config directory contains the WaveVision 5 configuration file (WV5.ini) as well as a subdirectory for each DUT for which you have saved a register set. Each DUT subdirectory contains a DefaultRegisters.txt file, which contains the default register values and a Registers.txt file containing the register data you have saved (if any).

The DataDumps directory contains any numeric data which has been logged, as well as, the contents of the last DUT, and capture board EEPROMs, connected to the system.

The Exports directory contains any data files you export from the program.

The Images directory is where images you write from the program are saved.

The Imports directory is the default location where WaveVision 5 looks for ASCII data files to import.

The LogFiles directory is where the logging configuration file (Logging.ini) is stored, as well as any log files created by the program.

The PlotData directory contains the sample plot files installed with WaveVision 5, and is where any plot files you save are stored. OriginalSampleFiles contains copies of the sample files, so you can restore them, as needed.

The eeprom and firmware directories contain files needed to support various boards that can be used with WaveVision 5.

Glossary

SNR: Signal-to-Noise Ratio is the ratio expressed in dB, of RMS value of the input signal to the RMS value of all other spectral components below half the clock frequency, not including harmonics or DC
SINAD: Signal to Noise + Distortion is the ratio expressed in dB, of RMS value of the input signal to the RMS value of all other spectral components below half the clock frequency, including harmonics but excluding DC

THD: Total Harmonic Distortion is the ratio expressed in the dBc, of the RMS total of the first specified number of harmonic levels at the output to the level of fundamental at the output
SFDR: Spurious Free Dynamic Range is the difference expressed in dB, between the RMS value of the input signal and the peak spurious signal, where the spurious signal is any signal present in the output spectrum that is not present at the input
ENOB: Effective Number of Bits is another method of specifying Signal-to-Noise and Distortion or SINAD. ENOB is defined as (SINAD – 1.76) /6.02 and says that the converter is equivalent to a perfect ADC of this (ENOB) number of bits.

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