



NAVIGATING GIGAVIEW

FOR THE SIA

Features of *GigaView*

- Comprehensive and versatile jitter analysis software enables users to quickly understand the performance of their clock/PLL circuits as well as data communications protocols (Datacom).
- One button solution jitter testing for multiple Datacom compliant standards.
- Enhanced macros capabilities that further simplify data logging and accelerate the tool setup and analysis of clock and data signals.
- Plot Interpreter helps the user understand the various plots shown by *GigaView*.
- Composite Plot allows overlaying of previously saved data with current data.

Introduction

This guide introduces a new user to the basic controls and features of *GigaView* software. Refer to the user's manual and the Help files provided in the *GigaView* software for more detailed information on the *GigaView* functions and features. The Initial *GigaView* screen is shown to the right (Figure 1).

Initial Dialog Bar

There are two main sections of this initial screen that users should familiarize themselves with. The Dialog Bar menu along the right side of the screen allows the Oscilloscope tool, Clock, Data Standards or a broad category of application tools to be opened directly. Each category contains one or more analysis tools that are specific to the category. The dialog bar is present throughout testing and provides menus that control each tool. The dialog bar changes to control the current active tool (window). Figures 2-7 illustrate the breakdown of each category.

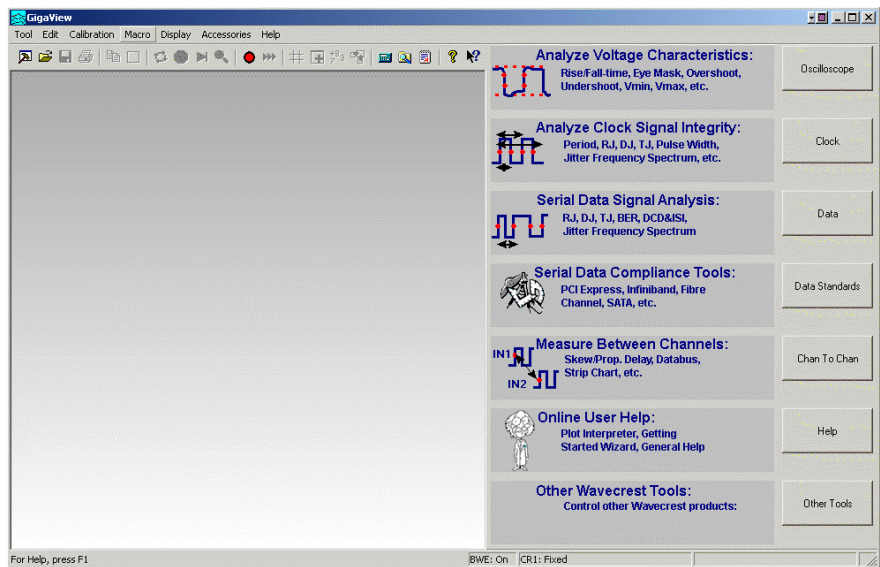


Figure 1 – Initial *GigaView* Screen


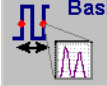

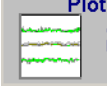


 Complete Clock Analysis: Analyze all clock Voltage and Timing Parameters	Clock Analysis
 Basic Clock Timing: RJ, DJ, T.J, Period, Pulse Width, etc.	Histogram
 Analyze Jitter Spectrum: Periodic Jitter, Sinusoidal Jitter Amplitude, etc.	High Frequency Modulation
 Plot Results Over Time: Average, Min, Max, 1-sigma, Peak-to-Peak, etc.	Strip Chart
 Analyze PLL Performance: Transfer Function, Bode Plot, Poles and Zeros, Lock-in Time, etc.	2nd Order PLL Analysis
 Analyze PLL Performance: Transfer Function, Bode Plot, Poles and Zeros, Lock-in Time, etc.	3rd Order PLL Analysis
Other Clock Analysis Tools:	Other Clock Tools

Figure 2 - Clock Category





	Measure Propagation Delay or Skew	Propagation Delay and Skew
	Bitclock Data Input1 Data Input2	DataBUS
	Ref Clock PLL Clock Lock Signal	Chan-to-Chan Locktime
	Average, Min., Max., 1-sigma	Plot Measurement Results Over Time

Figure 3 - Multi-Channel Category





KNOWN REPEATING PATTERN Results: TJ, RJ, DJ, PJ, DCD+ISI Compliant and Diagnostic Jitter Measurements  Measurement Requirements: * Repeating Pattern * Marker (SIA Marker or from External)	Known Pattern w/Marker
ANY DATA RELATIVE TO BIT CLOCK Results: TJ, RJ, DJ Compliant and Diagnostic Jitter Measurements  Measurement Requirements: * Any Data Signal * Bit Clock (SIA PLL or from External)	Random Data w/Bit-Clock
ANY DATA Results: TJ, RJ, DCD+ISI Diagnostic Jitter Measurements Only  Measurement Requirements: * Any Data Signal	Random Data No-Marker
REPEATING PATTERN RELATIVE TO BIT CLOCK Results: RJ, DJ, TJ Compliant and Diagnostic Jitter Measurements  Measurement Requirements: * Repeating Pattern * Bit Clock (SIA PLL or from External) * Marker (SIA Marker or from External)	Known Pattern with Bit Clock & Marker

Figure 4 - DataCom Category

PCI Express Compliance Tool: <table border="1"> <thead> <tr> <th>Quantity</th> <th>Specification</th> <th>Measured</th> <th>Pass/Fail?</th> </tr> </thead> <tbody> <tr> <td>VRX-DIFFp-p</td> <td>175mV-1.2V</td> <td>736mV</td> <td>PASS</td> </tr> <tr> <td>VTX-DE-Ratio</td> <td>-4dB-3dB</td> <td>0.946dB</td> <td>FAIL</td> </tr> </tbody> </table>	Quantity	Specification	Measured	Pass/Fail?	VRX-DIFFp-p	175mV-1.2V	736mV	PASS	VTX-DE-Ratio	-4dB-3dB	0.946dB	FAIL	PCI Express
Quantity	Specification	Measured	Pass/Fail?										
VRX-DIFFp-p	175mV-1.2V	736mV	PASS										
VTX-DE-Ratio	-4dB-3dB	0.946dB	FAIL										
Fibre Channel Compliance Tool: <table border="1"> <thead> <tr> <th>Quantity</th> <th>Specification</th> <th>Measured</th> <th>Pass/Fail?</th> </tr> </thead> <tbody> <tr> <td>DJ (pk-pk)</td> <td><0.14UI</td> <td>0.084081UI</td> <td>PASS</td> </tr> <tr> <td>TJ</td> <td><0.26UI</td> <td>0.112643UI</td> <td>PASS</td> </tr> </tbody> </table>	Quantity	Specification	Measured	Pass/Fail?	DJ (pk-pk)	<0.14UI	0.084081UI	PASS	TJ	<0.26UI	0.112643UI	PASS	Fibre Channel Compliance
Quantity	Specification	Measured	Pass/Fail?										
DJ (pk-pk)	<0.14UI	0.084081UI	PASS										
TJ	<0.26UI	0.112643UI	PASS										
Serial ATA Compliance Tool: <table border="1"> <thead> <tr> <th>Quantity</th> <th>Specification</th> <th>Measured</th> <th>Pass/Fail?</th> </tr> </thead> <tbody> <tr> <td>TJ.N=5</td> <td><0.33UI</td> <td>0.093917UI</td> <td>PASS</td> </tr> <tr> <td>DJ.N=5</td> <td><0.15UI</td> <td>0.04379UI</td> <td>PASS</td> </tr> </tbody> </table>	Quantity	Specification	Measured	Pass/Fail?	TJ.N=5	<0.33UI	0.093917UI	PASS	DJ.N=5	<0.15UI	0.04379UI	PASS	Serial ATA
Quantity	Specification	Measured	Pass/Fail?										
TJ.N=5	<0.33UI	0.093917UI	PASS										
DJ.N=5	<0.15UI	0.04379UI	PASS										
Infiniband Compliance Tool: <table border="1"> <thead> <tr> <th>Quantity</th> <th>Specification</th> <th>Measured</th> <th>Pass/Fail?</th> </tr> </thead> <tbody> <tr> <td>DJ (pk-pk)</td> <td><92ps</td> <td>6.459ps</td> <td>PASS</td> </tr> <tr> <td>TJ</td> <td><184ps</td> <td>44.773ps</td> <td>PASS</td> </tr> </tbody> </table>	Quantity	Specification	Measured	Pass/Fail?	DJ (pk-pk)	<92ps	6.459ps	PASS	TJ	<184ps	44.773ps	PASS	Infiniband
Quantity	Specification	Measured	Pass/Fail?										
DJ (pk-pk)	<92ps	6.459ps	PASS										
TJ	<184ps	44.773ps	PASS										

Figure 5 - Data Standards Category



Figure 6 - Utilities Category

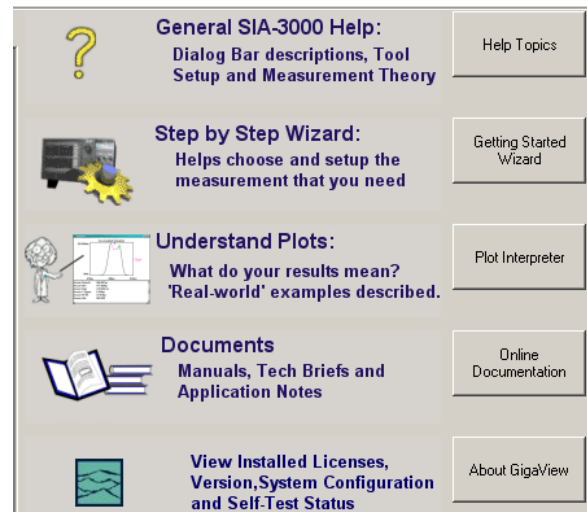



Figure 7 - Help Category




Figure 8- Menu Bar

Figure 8 is a close up view of the *GigaView* menu bar. The menu bar contains specific configuration controls such as the Composite Plot icon, macro pull down menu, help and the calibration menu. Under the help menu you can find the Getting Started Wizard, the Plot Interpreter and online documentation. This toolbar will be present at all times in *GigaView* and will show the controls for the current active tool (window). Some of the icons are not active until a tool has been selected. Many of these controls are also buttons on the front panel.

The following is an overview of each of these controls:

 New Tool button: Opens a new tool or tools allowing many tools to be utilized at one time. "Tool" on the Front Panel (Figure 9) performs the same function. When chosen, the dialog bar seen on the right side of the initial *GigaView* screen (Figure 1) will appear allowing the selection of a new tool. The new tool appears as a new window.

 Copy Button: Copies the current active view to the clipboard.


 Clear Button (also on Front Panel, see Figure 9): ERASES measurements (plot and summary) in the current active tool. The dialog bar settings are not changed.



Figure 9 - Front Panel Acquire Controls



Run/cycle button (also "Run" on Front Panel, Figure 9): This button repetitively acquires or cycles new measurements. Either the Disable All button or the Single Acquire/Stop Run button will stop cycling.



Disable all button: The Stop command halts all measurements. ("Disable" on the Front Panel, Figure 9, will halt ALL measurements in ALL tools.)



Single Acquire/Stop Run button (also "Single/Stop" on Front Panel, Figure 9): Acquires a single measurement (a histogram, for example). It is also used to stop a series of measurements from being taken after the "Run" button is pressed. This controls only the current active tool.



Pulse find button (also "Pulse Find" on Front Panel, Figure 9): Determines the threshold voltages based on the current Tool settings. This function is only available with the Auto option under the Voltage menu in any tool.



Toggle Marker Mode Button: Activates marker bars. Pressing the button toggles between horizontal, vertical and both sets of markers. Once the marker bars are activated, right clicking on them to drag and drop may move them. From the Front Panel (Figure 9), press, "Enable" to activate markers and "Select" to choose a marker to move. Once a marker is selected, use the thumbwheel knob to position it. Marker values and Delta are displayed to the right (Figure 10).

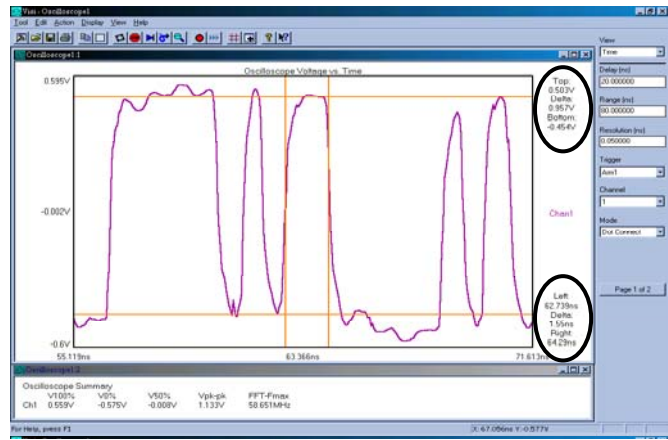


Figure 10 – Markers Enabled



Record/Stop Macro Button (Figure 11): Record a series of steps or keystrokes that can then be saved. To save a particular macro, go to the Menu Bar and select Action, Macro, Save.



Playback Macro Button (Figure 11): After recording or recalling a saved macro (.vbs file) uses the playback button to run the macro. To load a particular macro, go to the Menu Bar and select Action, Macro, and Load.



Figure 11 – Front Panel Macro Buttons

The *GigaView* software provides the capability of creating custom macros to repeat common keystrokes using the Macro Record and Playback. The Macro interface is based on Microsoft's Visual Basic Script Language that includes the ability to control program execution using conditional and looping statements.

Note that in the initial *GigaView* screen (see Figure 1), the macro record button is highlighted indicating that the option to begin recording a macro is available to the user at this point. The Playback button is grayed out because a specific macro has not been selected. To select a macro file, on the Menu Bar, select Macro and Load.... This panel (see Figure 12) will list the *.vbs files residing in whichever folder or directory is chosen. Macro files (.vbs) will be depicted with a Visual Basic script icon. Once a macro file is opened, users can select to run the macro by pressing the Playback Button on the top toolbar.

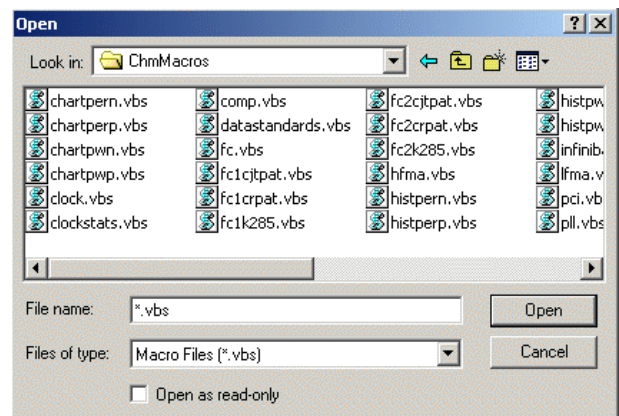


Figure 12 – Open Macro Dialog Box

Macros can also be edited. This provides the ability of adding and/or deleting steps. Message boxes can be added to the macro to prompt other users to connect the instrument in a specific manner or to adjust certain external parameters.

To edit a macro, go to the Menu Bar and select **Macro** and **Edit...** This will open the Macro Edit Dialog Box (see Figure 13).



New View Button: Adds a new view of the currently Active Tool. Each tool has many different views associated with it (Figure 14). By adding a new view you can see many views of the same tools simultaneously. To change views in a particular window, select that window and use PgUp or PgDn on the keyboard or use the "View" selection on the Dialog Bar.

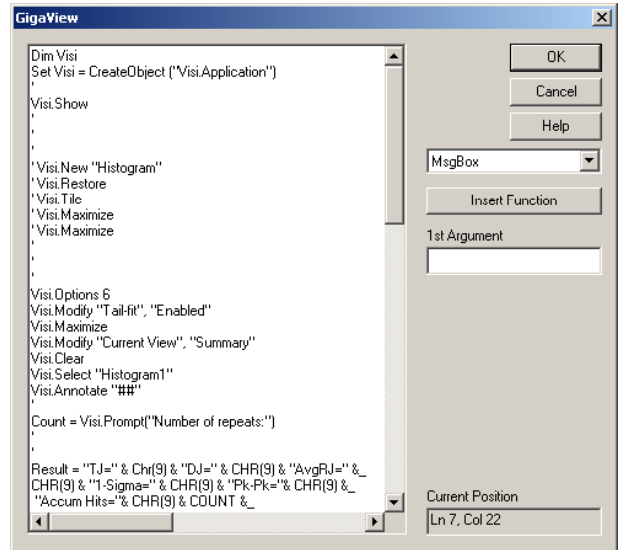


Figure 13 – Macro Edit Popup Box

Multiple Views

The example on the right shows multiple views of the Histogram tool with TailFit algorithm enabled. The top window shows the histogram; the middle window, a bathtub curve view; and the bottom window, a statistics view.

As with all Microsoft® Windows based programs, the dimensions of any window added during this procedure can be changed to facilitate better viewing. Regardless of subsequent measurements, these window dimensions will remain the same until another window/view is added or a window is closed. See Figure 14.

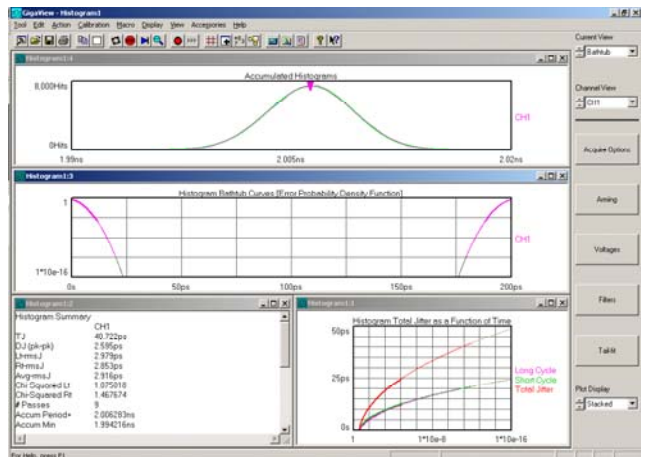


Figure 14 - Multiple Views

Front panel controls in Figure 15 allow you to control the active view. Maximize View will expand the active view to full screen. Next will change which view/tool is active. Close will close the current view/tool. Add View will add a copy view of the active view that can then be changed.



Values on Plot: Displays chosen Summary values on the plot. To display only some values, go to the Menu bar, select **Display, Values on Plot...** From the list of choices, select specific measurement values to display. Annotations such as part numbers, environmental conditions, or other pertinent test setup notes may be added to the Summary View. To add an annotation, go to the Menu Bar, select **Edit,** then **Annotation.** This will open a dialog box for text entry.



Figure 15 - View Controls on the Front Panel




Composite Plot Button: This button opens the composite plot tool that allows you to label and overlay previously run plots with current plots.





Calculator Button: This button opens the Microsoft® Calculator.




Windows Explorer Button: This button opens the file explorer window. Use this to search, move or delete files from the SIA internal hard drive.

 WordPad Button: This button opens Microsoft WordPad. You can cut and paste items into this text editor that you can then use in a report or spreadsheet.

 Help Topics Button: This button opens the SIA *GigaView* help. From here you can explore the help contents and search for help topics.

 Help arrow Button: This button can be used to inquire about any tool control/setting in *GigaView* or the front panel. If you don't know what a control/setting in a tool is for, you can first click on this button and then click on the setting to open a help file about this setting. You can also use this to access help about anything else in the *GigaView* window.

 Open Tool Button: This function allows users to open previously saved *GigaView* files.

 Save Tool Button: This function allows users to save *GigaView* files.

The *GigaView* software allows users to recall and save measured data and tool settings. Actions such as changing views, zooming and enabling markers can be performed on recalled data. Setup and data files can be shared to simplify site-to-site correlation or configurations.

Files can be saved in a variety of formats. Figure 16 shows the file save formats. The following is a brief overview of each of these formats:

- Current *GigaView* tool Settings & Data (*.vtd):

Use of this file extension saves the measurement data that appears in all the available views of the analysis tool that is currently being using. Regardless of how many tools were open, users should be aware that when saving data as a .vtd file, only the active tool will be saved. When a (.vtd) file is opened the saved tool will open to the default view regardless of the number of plots that were being displayed at the time that the user saved the tool and the data. Once open, the user may display the other saved views.

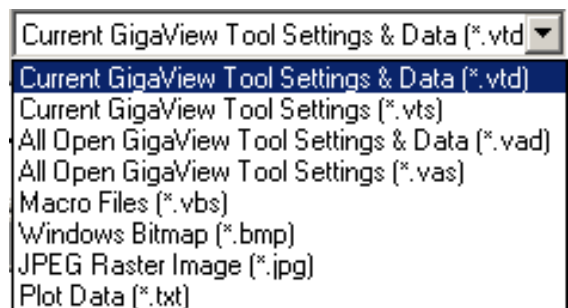


Figure 16 – Save Tool Formats

- Current *GigaView* tool Settings (*.vts):

Use of this file extension saves the current active Tool settings only. It does not save any measurement data. When a (.vts) file is opened, the saved tool will open all the views of the tool that were open at the time that the file was created. Also, the dialog bar menu settings will be the same as when the file was created. In cases where geographically separated groups of *GigaView* users are working on the same or associated projects, (.vts) files can be sent via e-mail to run the same test with the same settings. Once open, a user can immediately begin testing.

- All Open *GigaView* Tool Settings & Data (*.vad):

Use of this file extension saves all tools that are open along with their respective dialog bar settings *and* the measurement data that appears in all the available views for those tools. This allows an entire "study" to be saved. When a (.vad) file is opened, the saved tools will open to the views that were open at the time that the user created the file and display measurement data that was displayed at the time. Once open, the views of the saved tool/s and measurement data can be manipulated.

- All Open *GigaView* Tool Settings (*.vas):
Use of this file extension saves all tools that are open along with their respective dialog bar settings. It does not save any measurement data. When a (.vas) file is opened, the saved tools will open to the views / plots that were open at the time that the user created the file. Assuming that an instrument is connected, once the file is open users can immediately begin to take measurements.
- Macro Files (*.vbs)
File extension used with saved macro files.
- Windows Bitmap (*.bmp):
This option saves the current active View as a graphics (.bmp) image. The user can then access this file through a draw or paint program for inclusion into a document and/or printing. (.bmp) files save images in great detail so these file types are typically large.
- JPEG Raster Image (*.jpg):
This option saves the current active View as a graphics (.JPEG) image. The user can then access this file through a draw or paint program for inclusion into a document and/or printing. This format has less detail than (.bmp) files and uses less memory than the (.bmp) format.
- Plot Data (*.txt):
This option saves the XY coordinates of the active *GigaView* window as a (.txt) file. A few tools, like histogram, store the raw histogram measurements. These values can be imported into a spreadsheet for further analysis.

Edit Menu (for system settings)

Go to the Menu Bar and select **Edit**, a number of dialog boxes are available (Figure 17). Choose **Display Settings** to customize plot line, grid line, background and font colors. Typically, Margins and Axis labels are displayed (Figure 18). When the No Margins option is selected or checked, plot legends and labels will not be displayed when more than one tool or view is open (Figure 19). No Margins allows many plots to be displayed on the screen. To see legends, select a view and maximize it.

The **GPIB Configuration** dialog box allows you to configure the GPIB address for the SIA, external Wavecrest hardware, or set 'listener' or 'controller'.

The **Global Tool Settings** box has controls to set the Rise/fall thresholds used (percentage or absolute). Attenuation factor can be set to compensate for probes or attenuators used on a channel. The Pattern Path and Data Path buttons allow you to change directories if you frequently save data patterns and measurement data to directories other than C:\VISI.

The **CR Configuration** menu sets up the Clock recovery module if installed.

The **Optical Configuration** menu configures the OE-2 Optical to Electrical instrument if connected to the SIA by GPIB.

For Configuration Menu changes to be activated, the **Apply** button must be clicked on before closing and exiting the configuration menu panel. Clicking on **Reset** will set all parameters to default settings.

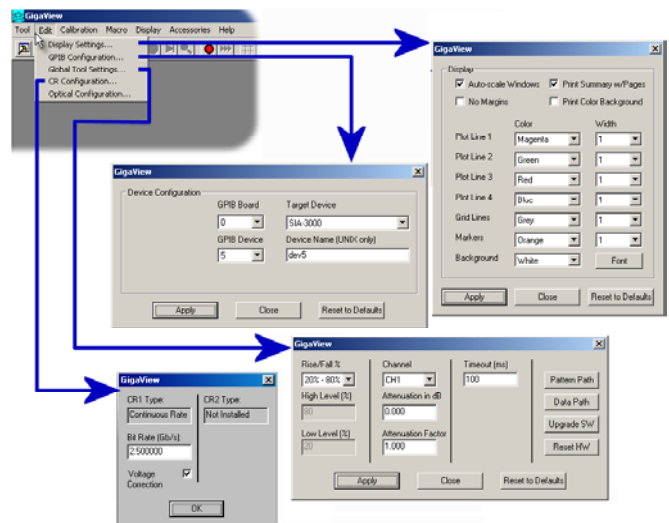


Figure 17 - Configuration Menu

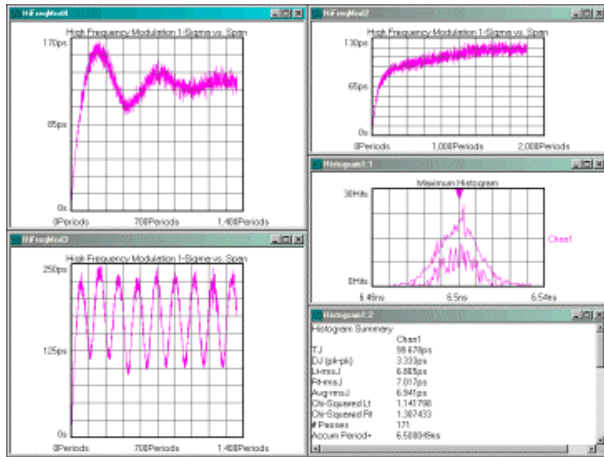


Figure 18 – No Margins (de-selected)

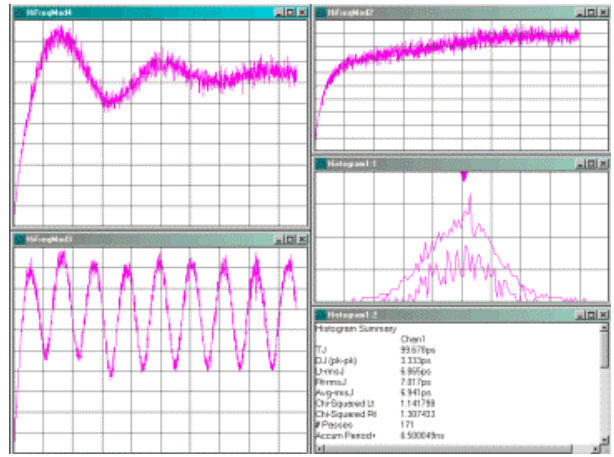


Figure 19 – No Margins (selected)

Print Previews

On the Menu Bar, under Tool, choose Print Preview. The active tool will become the file that is printed. The preview shows what will be printed. The information from the Summary view is automatically added to each plot for printing including annotations.

A print options dialog appears when Print is chosen. Each possible view for that tool is shown as a page to print. Single pages may be printed or all pages in a range. Also the print view colors are changed to provide a white background with black text—no matter the configuration. To Print with Background colors, select Print Color Background in the Edit Display Settings menu (Figure 17).

Status Bar

GigaView includes a status bar in the lower right hand corner of the screen. The word "RUN" will appear along with a horizontal black bar that will grow and move from left to right to indicate progress (refer to Figure 20) as well as a measurement timer which shows the total elapsed time of the current measurement. This feature is active whenever the instrument is taking a measurement or a series of measurements.

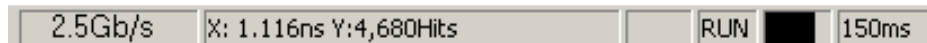


Figure 20 - Status Bar

There is also a section of the status bar that display the XY coordinates of the mouse. When the mouse is moving over a plot, this area displays the XY coordinates of the mouse. The units are the units of the plot that the mouse is over. If a clock recovery module is installed, the set data rate is displayed to the left of the cursor coordinates.

Zoom on plot

The "Hold Zoom" feature holds zoom settings from the mouse and cursor when "RUN" is pressed (see Figure 21).

To zoom in on area of interest and remain zoomed in during subsequent measurements, activate the "Hold Zoom" feature. Go to the Menu Bar; select **Display**, and **Hold Zoom**. With "Hold Zoom" active, the Vertical and Horizontal scaling knobs on the front panel have the same effect as using the mouse.

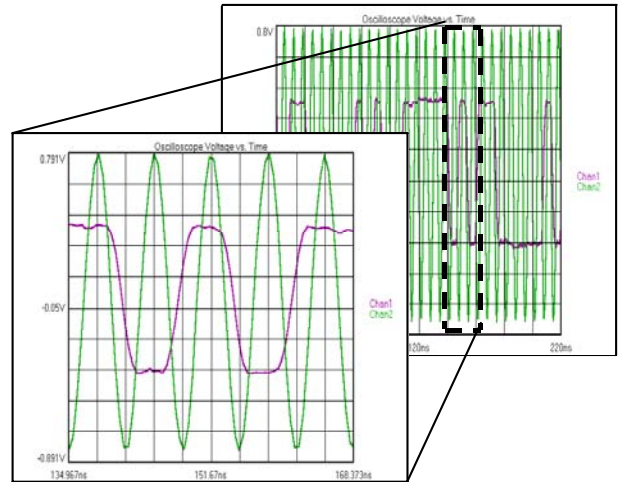


Figure 21 - Zoomed-in View

Composite Plot

The composite tool overlays or displays several different views of saved (similar) data. Any data sets (with the same XY axes) can be used such as FFT, histogram, 1sigma vs. period, etc. Figure 22 depicts a Composite Plot of the High Freq Mod Analysis tool 1-sigma views of an input (magenta trace) to a clock recovery circuit and the recovered clock output (green trace). This allows saved results to be compared to current measurements or multiple runs of measurements to be compared to each other.

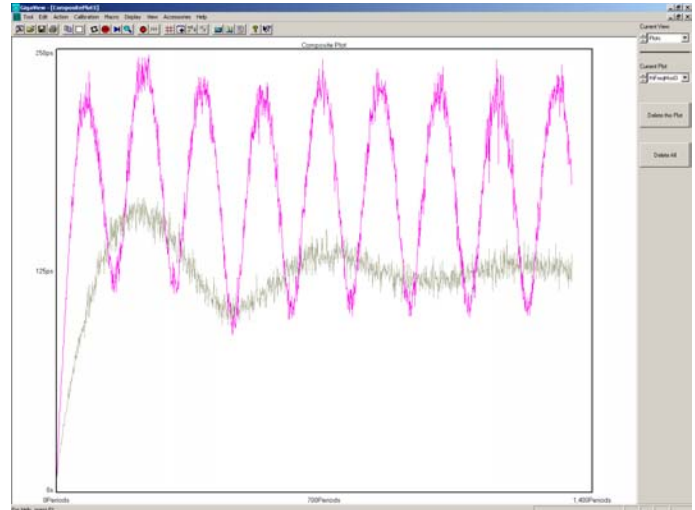


Figure 22 - Composite Plot Tool

Summary

The new features of the *GigaView* software provide enhanced analysis tools. Multiple Data Communication standards test tools offer a one-button solution for compliant testing. The *GigaView* diagnostic tools combine to form a user-friendly and powerful analysis package for jitter and timing measurements.

FEEL FREE TO CONTACT US:

WAVECREST CORPORATION

7610 EXECUTIVE DR

EDEN PRAIRIE MN 55346

WWW.WAVECREST.COM

1(952)-646-0111