

Getting Started with RT-Eye™

You can use this side of the Quick Reference to get started taking measurements with the RT-Eye Serial Data Compliance and Analysis Application. The other side contains a complete menu tree for RT-Eye software.

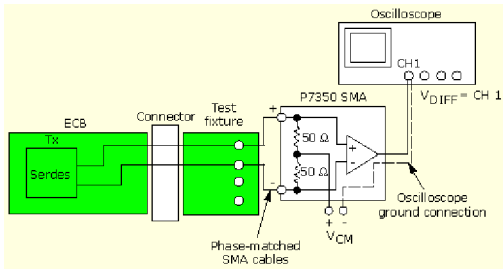
NOTE. For complete operating instructions and General Safety information, refer to the Online Help for the application.

The RT-Eye application transforms your TDS6000 and TDS/CSA7000B and TDS/CSA7000 series oscilloscopes into a test solution for validation and compliance testing of serial data devices. Applications include testing for high speed serial data standards, such as PCI Express, InfiniBand, Serial ATA, XAUI, Fibre Channel, Rapid IO, and for future standards.

Performing a Transmitter Compliance Test

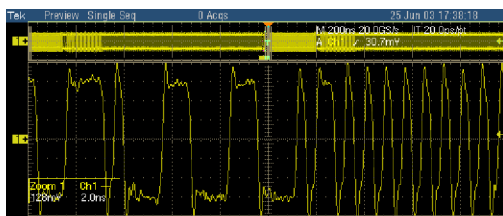
To set up the application, follow these steps:

1. In the oscilloscope menu bar, select File > Run Application > RT-Eye Serial Compliance and Analysis. The application starts the Serial Analysis Module.
2. Attach a P7380SMA probe (8 GHz SMA differential probe) between the device under test (DUT) and the industry-specified test fixture.



You can use two SMA-to-TCA connectors or two P7260 probes (6GHz single ended active probes) for pseudo-differential and common mode acquisitions. You can also use a P7350 probe to take measurements on the circuit board at the pins of a receiver DUT.

3. On the oscilloscope, press the DEFAULT SETUP, then AUTOSET front-panel buttons to display a stream of serial bits.

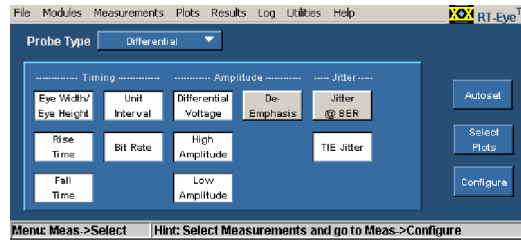


4. In the RT-Eye application menu bar, select a Module. Serial Analysis is the default module.

You can use the Serial Analysis module for general or customized compliance tests. If you have an optional compliance module, select the module from the Module drop down list to conduct compliance measurements.



5. Select the tests to be performed in the Measurements > Select menu; this is the default menu.



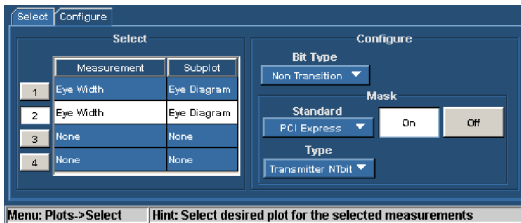
If the Probe Type option is Single Ended, common mode AC and DC measurements are also available.


6. Select the Autoset button, and then select the Autoset button in the Autoset Summary popup menu to confirm. This sets the vertical scale, horizontal resolution, and reference voltage levels for accurate measurements.

7. To use analysis plots, select Plots > Select, and then the measurement and desired plot.

The types of plot are Eye Diagram, Histogram, Time Trend, Spectrum, and Bathtub Curve. Plots are available based on the selected measurement.

8. Select the Configure tab to configure a plot, such as Transition and Non-Transition bit mask testing on an eye diagram.



9. Select  to acquire data and take measurements.

When sequencing is complete, the Results Summary menu and an Eye Diagram appear. See figure 1.

10. Select the Details button to view the Results Details menu. The population, statistics, and Pass/Fail (when using a Limits Module) results appear for all active measurements.

SmartGating - Use Cursors or a Clock Recovery Window defined by a specified number of consecutive Unit Intervals (UI) or Edges through the Measurements > Configure > Gating menu. Set up and use a second Analysis Window within the clock recovery window as defined by the PCI Express specification. The Clock Recovery and Analysis Windows can be further customized by the user.

Population Control - Configure the analysis to stop at a specified population of measurements or acquisitions through the Measurements > Configure > Population menu.

Minimum Required System Configuration

- Option W2K - Windows 2K OS
- Option CPU - 850MHz Processor
- 256 MB DIMM, Tektronix part number 040-1682-00, 512 MB SDRAM
- Firmware V 2.4.0, www.tek.com/site/sw/search/

RT-Eye Application Ordering Information

This application supports TDS/CSA7000, TDS/CSA7000B series (1.5 GHz and above), and TDS6000 series models. Refer to the *Optional Applications Software on Windows-Based Oscilloscopes Installation Manual* for a list of specific models. The applications CD includes a PDF file of the installation manual.

For a new TDS/CSA oscilloscope, order:

- Option RTE - RT-Eye Serial Data Compliance and Analysis software
- Option PCE* - PCI Express Compliance module (Option RTE required)

- Option IBA* - InfiniBand Compliance module (Option RTE required)
- Option RTJ - RT-Eye software and TDSJIT3 (Jitter and Timing Analysis) software. See data sheets for complete feature set of both products

For an existing oscilloscope, order an upgrade:

- TDS6UP for TDS6000 Series with the above options
- TDS7UPB for TDS7000B Series with the above options
- TDS7UP for TDS7000 Series with the above options
- CSA7BUP for CSA7000B Series with the above options
- CSA7UP for CSA7000 Series with the above options

Recommended Accessories and Other Test Solutions

Probing

P7380SMA - 8 GHz Differential Active Probe (differential SMA input)

P7350 - 5 GHz Differential Active Probe

P7260 - 6 GHz Single Ended Active Probe

Signal Sources

AWG710 - Arbitrary Waveform Generator


DTG5000 Series - Digital Timing Generators

Digital Validation and Debug



TLA700 Series Logic Analyzers and TMS817, PCI Express Support Package

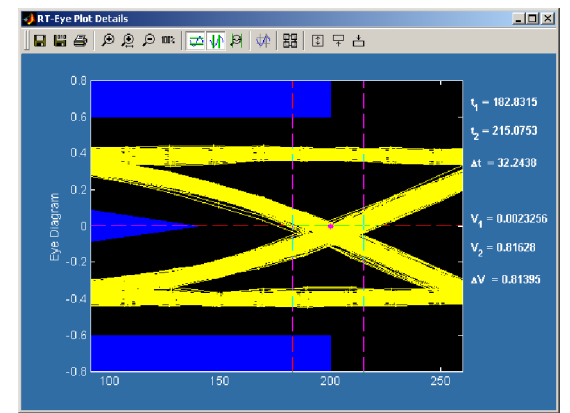
* Supports oscilloscope models 4 GHz and above.

Result, Statistic	This Acq	All Acqs	Lower Lim	Upper Lim	Status
Population	2474	42492			
Mean	0.0000s	0.0000s			
StdDev	9.8433ps	18.116ns			
Max	23.294ps	25.680ns			
Min	-28.961ps	-89.896ns			
Pk-Pk	52.216ps	84.486ns			

11. To view plot details, select the  tools.

A Plot Details window appears with more tools, such as

 for zoom and  for cursors.



You can use plot cursors to measure Time Interval Error (TIE) directly from an eye diagram plot.

Additional Features

Custom Compliance Testing - Import User masks through the Plots > Configure menu and configure Pass/Fail limits on measurements through the Measurements > Limits menu.

Report Generation - Create a compliance report through the Utilities > Report Generation menu.

Export to CSV - To export analysis results, select the Export to CSV button in either Results menu.

Worst Case Waveform Logging - Automatically capture a waveform that represents the worst case measurement condition through the Log > Worst Case menu.

Multiple Clock Recovery and Jitter Analysis Algorithms - Choose from four clock recovery algorithms through the Measurements > Configure > Jitter menu: Golden PLL, Custom PLL, Constant Mean, and Constant Median. Each models a different type of clock recovery method used in serial data receiver devices.

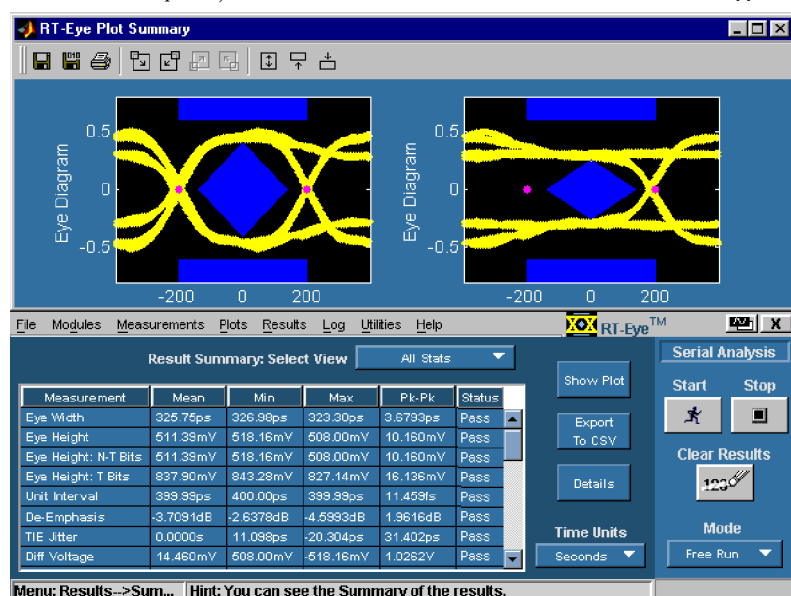


Figure 1: Complete compliance results

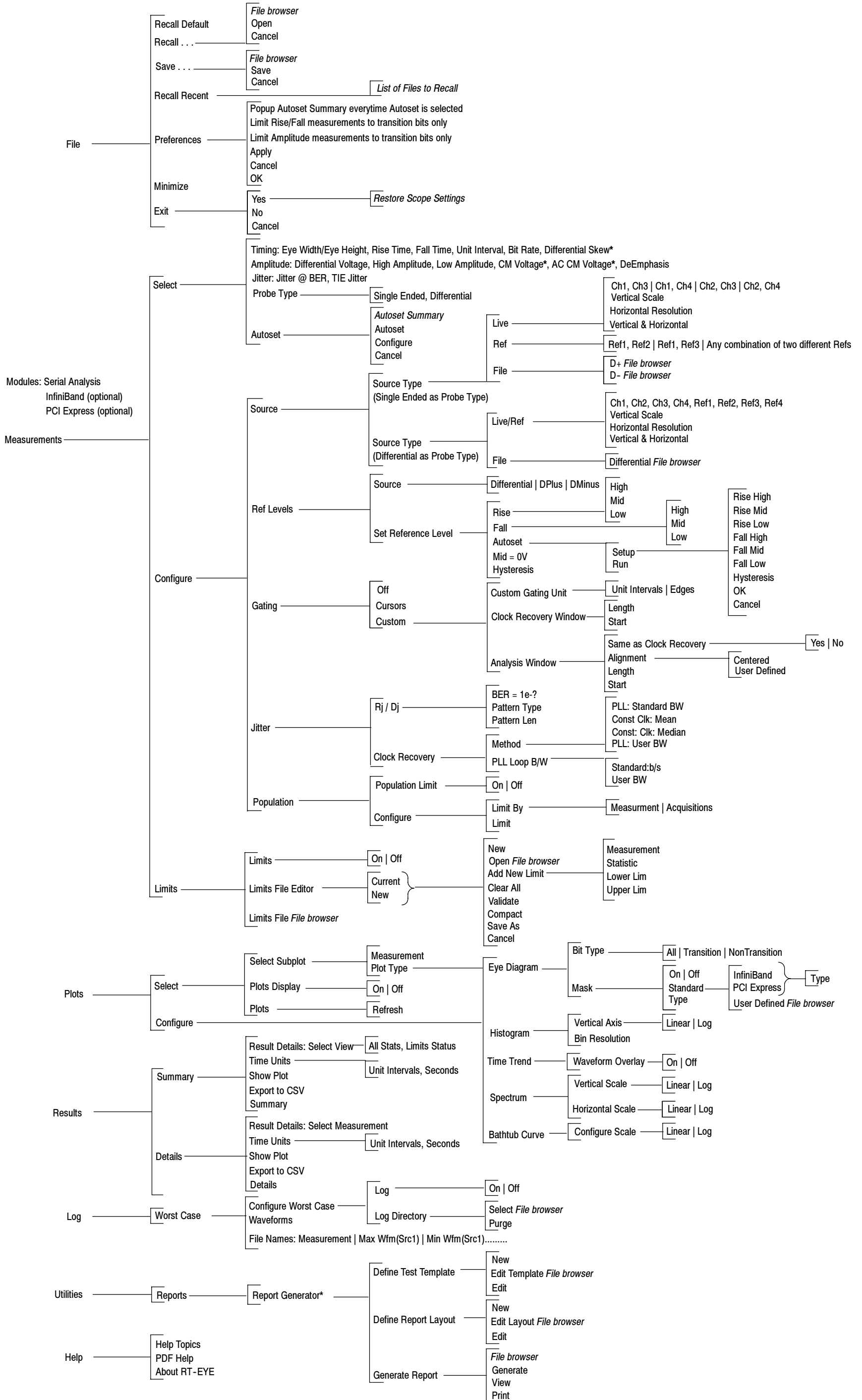
RT-Eye™
Serial Data Compliance and Analysis
Applications Reference

www.tektronix.com



071-1273-01

RT-Eye Application Menu Tree



* Added when Single Ended is the Probe Type.

** The Report Generator utility includes online help specific to the use of the Report Generator Editor.