

**TekExpress™ Serial ATA  
Automated Compliance Solutions  
Quick Start User Manual**

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For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.

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# General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

*Only qualified personnel should perform service procedures.*

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

## To Avoid Fire or Personal Injury

**Connect and Disconnect Properly.** Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Connect the probe reference lead to the circuit under test before connecting the probe input. Disconnect the probe input and the probe reference lead from the circuit under test before disconnecting the probe from the measurement instrument.

**Observe All Terminal Ratings.** To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

**Do Not Operate Without Covers.** Do not operate this product with covers or panels removed.

**Do Not Operate With Suspected Failures.** If you suspect that there is damage to this product, have it inspected by qualified service personnel.

**Avoid Exposed Circuitry.** Do not touch exposed connections and components when power is present.

## Terms in this Manual

These terms may appear in this manual:



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**WARNING.** *Warning statements identify conditions or practices that could result in injury or loss of life.*

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**CAUTION.** *Caution statements identify conditions or practices that could result in damage to this product or other property.*

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## Preface

TekExpress is the Tektronix' Compliance Test Automation Framework, developed to support current and future test automation needs of customers. Developed using National Instruments' TestStand, TekExpress leverages on the capabilities of Microsoft .NET framework and Arendar (Test Result Data Management). It is a highly modular architecture that enables deploying automated test solutions for various serial standards in a relatively shorter time. This release of TekExpress provides compliance test automation solutions for the Serial ATA Gen 1 and Gen 2 standard.

Options that are available with TekExpress Serial ATA are:

- TSG – PHY/TSG/OOB Test Suite
- RSG/RMT Tests Suite
- Tx/Rx Tests Suite
- TekExpress SATA Bundle for Host and Drive Test Suite
- SI Cable Tests for TekExpress SATA

## Key Feature

**Ease of Connectivity:** TekExpress enables compliance test automation and supports various connectivity options such as GPIB, Ethernet, Serial, and USB for easy connectivity using TekVISA. The Instrument discovery process feature makes it easier than ever to connect the instrument on TAN. The application will automatically discover all instruments and other devices connected on TAN.



## Documentation

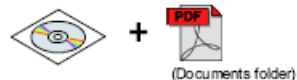
This manual describes the basic installation and operation of the TekExpress application. For more detailed information, see the online help and installation manuals. The following information is available for this product:

TekExpress Serial ATA Online Help, English 076-0096-xx



Start > Programs > Tektronix > TekExpress > TekExpress SATA > Help

TekExpress Serial ATA User Manual, English (PDF) 077-0044-xx



TekExpress Serial ATA Quick Start User Manual, English (PDF) 071-2298-xx



C:\Program Files > Tektronix > TekExpress > Documents

TekExpress Serial ATA Installation Manual, English (PDF) 071-2268-xx



## Software Upgrades

Periodic software upgrades may become available.

To check for upgrades:

- Go to the Tektronix Web site ([www.tektronix.com/software](http://www.tektronix.com/software)).
- Enter the product name (**TekExpress**).



# Install the Application

The TekExpress application must be installed on a computer or on a Tektronix oscilloscope.

## Before Installation


- Refer to the *TekExpress Serial ATA Automated Compliance Solutions Installation Manual* to find out about the prerequisites.
- Read the `Readme.txt` file on the product software DVD.

## Installation

1. Close all applications.
2. Insert the product software DVD into the DVD-ROM drive of the computer or oscilloscope.
3. The installation wizard will guide you through the installation. For information on installation, refer to *TekExpress Serial ATA Automated Compliance Solutions Installation Manual*.
4. The software files will be installed in `C:\Program Files\Tektronix\TekExpress`.

## Starting the Application

To start the software do one of the following:

- From the Start menu, select **Start > Programs > Tektronix > TekExpress > TekExpress SATA**.
- Double-click  on the desktop.

## Closing the Application

To close the application, do either of the following:

- Select **File > Exit**.
- Click .

Using other methods to exit the application will result in abnormal termination.



# Using TekExpress Application

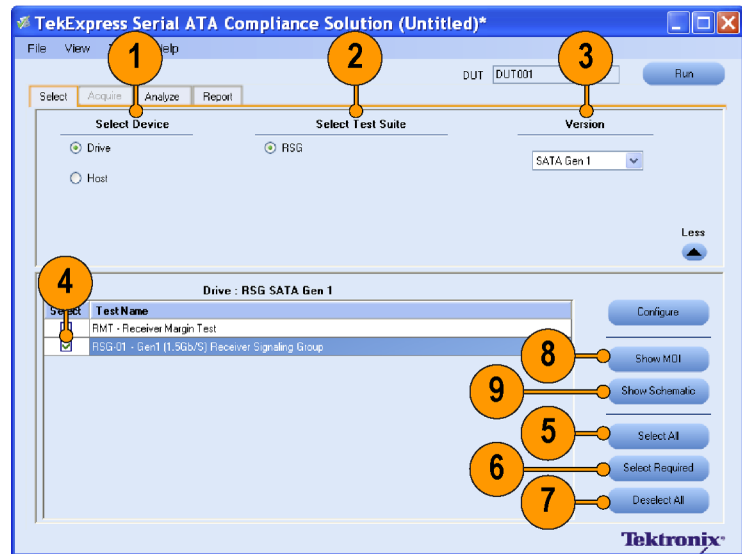
## Process Flow

Follow steps 1 to 6 to select and run a test to check for compliance. Details for each of these actions are given on the following pages.

1. Select a device.
2. Select the test suite, choose the version.
3. Select the test.
4. Configure the test parameters.
5. View and select connected instruments.
6. Run the test.
7. View the progress of analysis.
8. View and print the generated report.

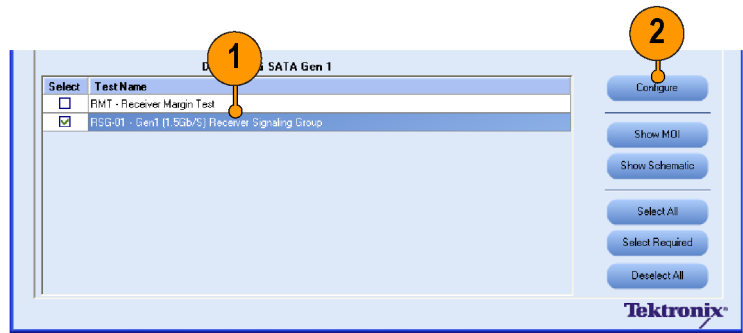
## Select a Test

1. Select a Device type.
2. Select the Test Suite.
3. Choose the version of the selected test suite from the **Version** drop-down list.
4. Select the test you want to run.  
You can select multiple tests from the list.
5. To select all the tests in the list, click **Select All**.
6. To select only the mandatory tests, click **Select Required**.
7. Click **Deselect All**, to disable the tests.
8. To see the Method Of Implementation of the selected test, click **Show MOI**.
9. To see the schematic diagram of the test setup, click **Show Schematic**.



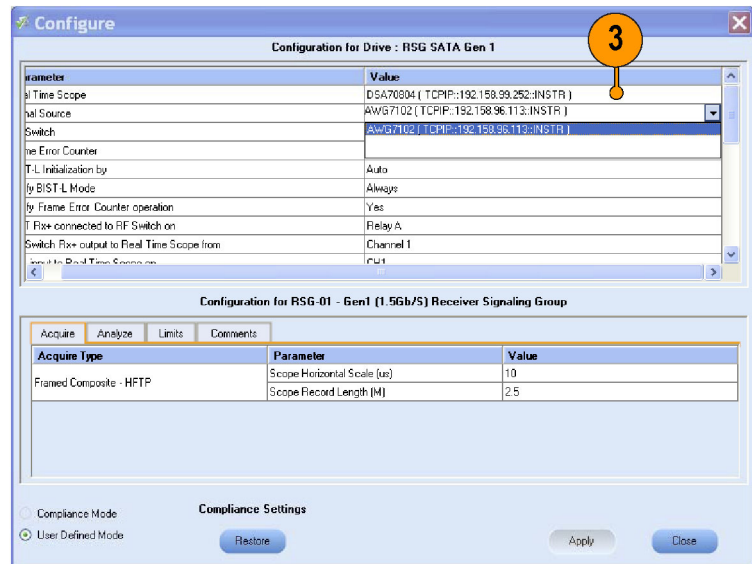
## Configure the Test(s)

1. Highlight the test you want to configure by clicking the test name.
2. Click **Configure**.



2298-021

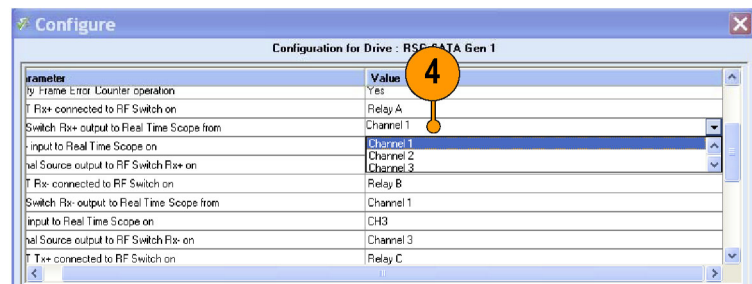
3. If multiple instruments are connected, choose the correct instrument from the drop-down list in the general parameters tab.



2298-014

4. Verify schematic related parameters such as Channel of the Oscilloscope.

**NOTE.** The default setup is according to the schematic provided with the test suite.



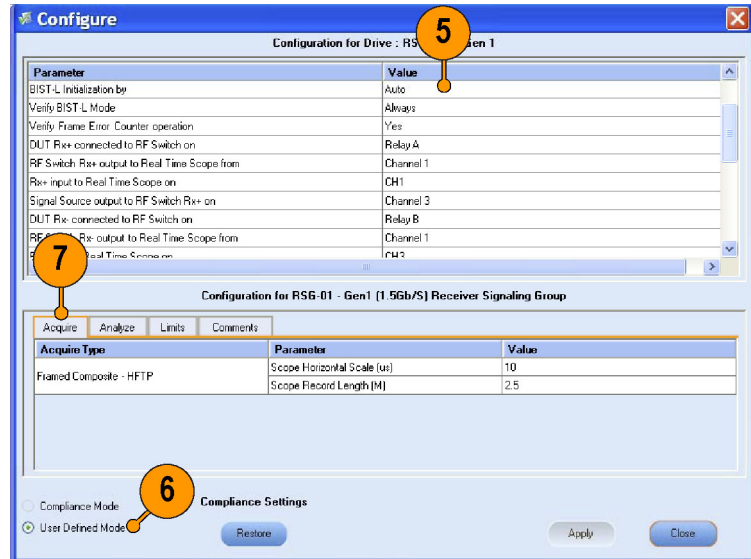
2298-016

- You can also change miscellaneous parameters such as BIST-L Initialization by.

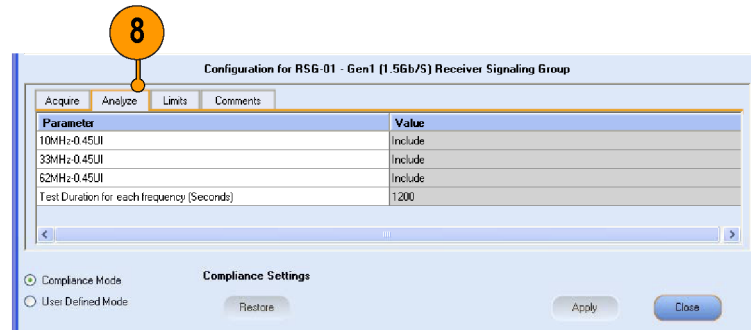
**NOTE.** General parameters are common to all tests, and can be edited even in the Compliance Mode. However, cells that are grayed cannot be modified in the Compliance Mode.

You can generally use the default settings in Compliance Mode.

- To configure the test parameters, select **User Defined Mode**.
- Click the **Acquire** tab to edit parameters related to acquisition.
- Click the **Analyze** tab to edit Analysis parameters.



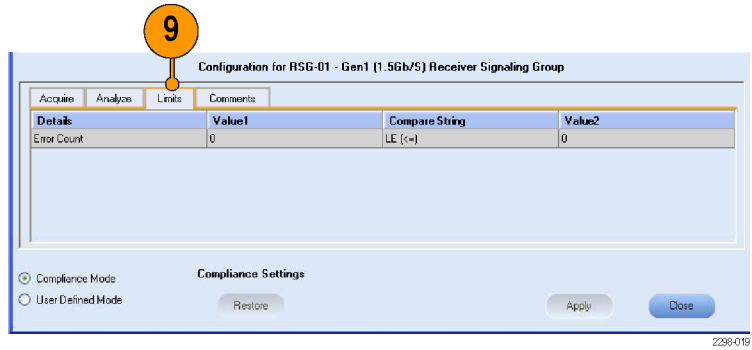
2238-015



2238-011

- View the measurement limits in the **Limits** tab.

Refer to the Online Help for various test limit comparisons.

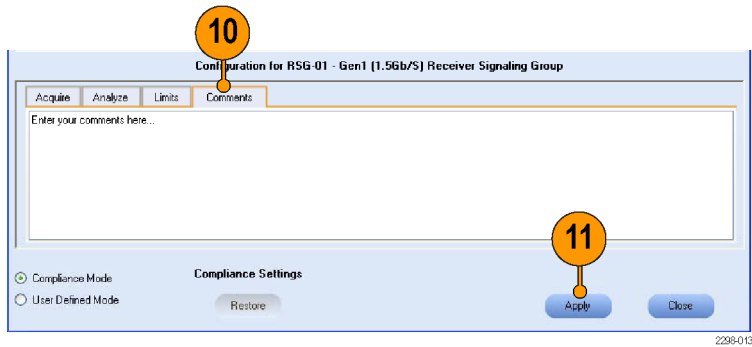


- You can enter test related comments in the **Comments** tab.

**NOTE.** If you want to change the settings to default, click **Restore**. This option will restore the settings to Compliance Mode.

- Click **Apply**.

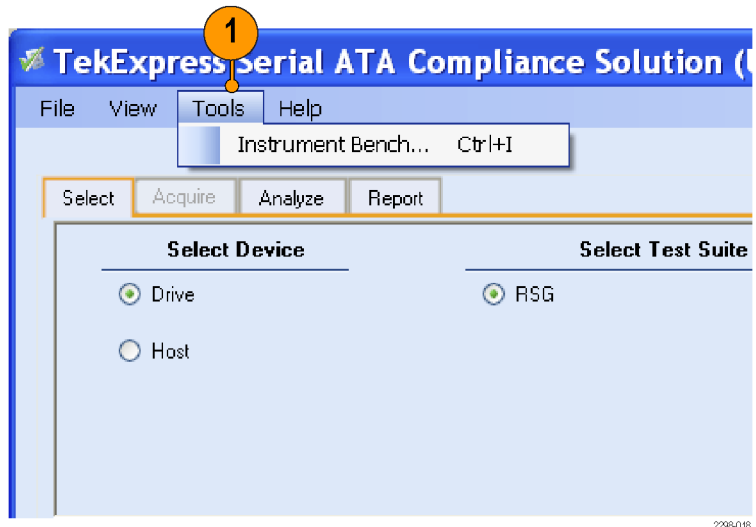
Use the File Menu to Save the session.



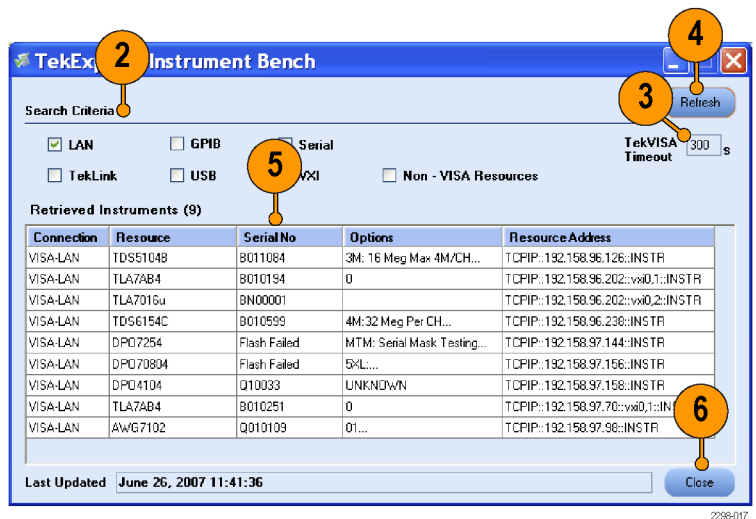


## View and Select Connected Instruments

1. Click **Tools > Instrument Bench**.

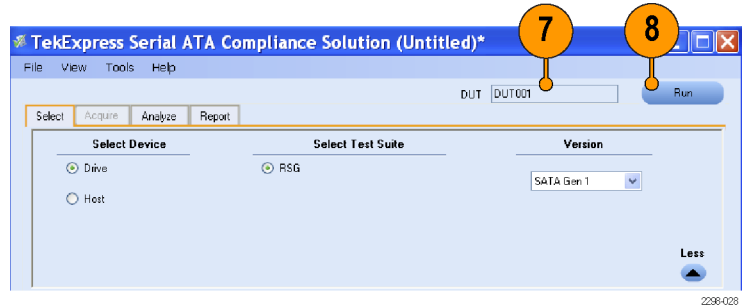


2. Select any of the **Search Criteria**.
3. Enter the time in seconds in the **TekVISA Refresh Timeout** field.
4. Click **Refresh**.
5. The results of the instrument search are displayed in the **Retrieved Instruments** table.
6. Click **Close**.



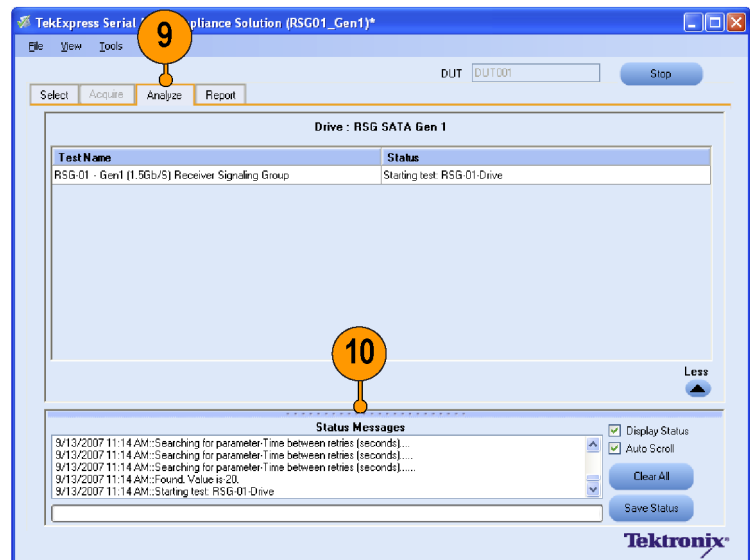
## Run the Test

7. Enter the ID of the Device to be tested in the **DUT** field.
8. Click **Run** to run the test.



## View the Progress of Analysis

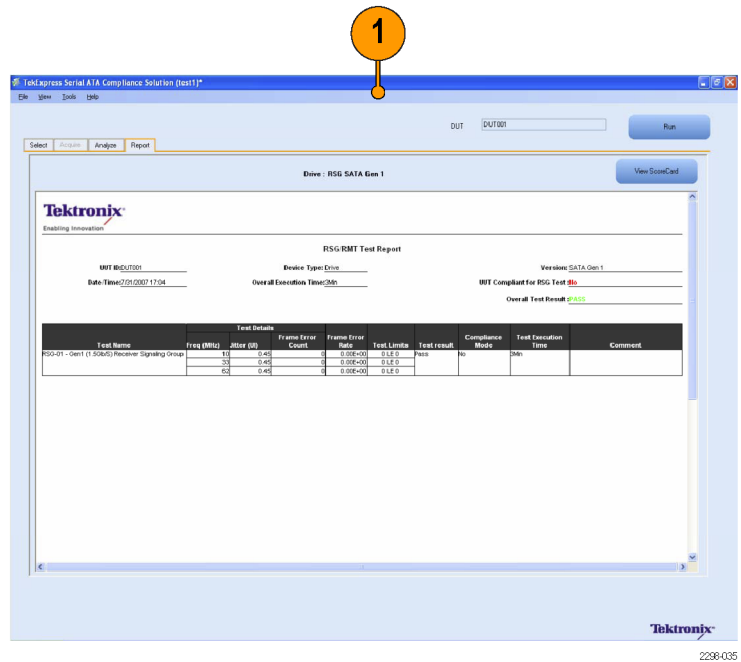
9. When the tests are running, the status and progress of the tests are displayed in the **Analyze** tab. The application checks to see if the device has passed the test.
10. The Status Messages window time stamps all runtime messages and displays them.



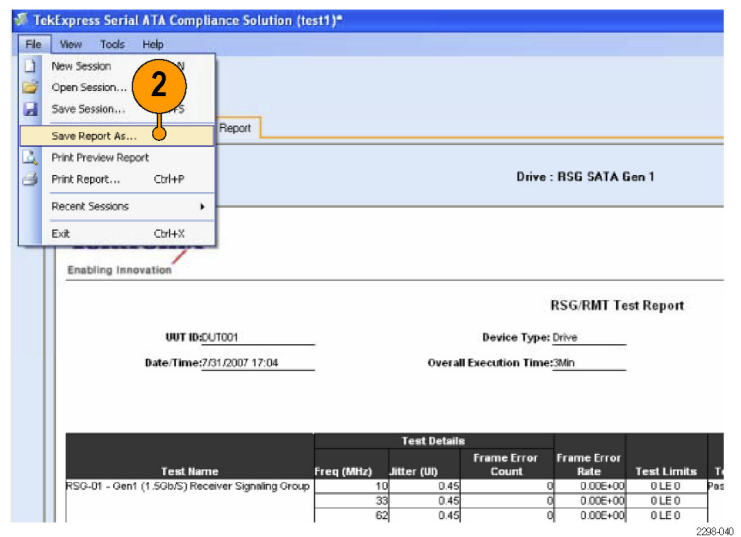
## View the Report

You can generate and print a detailed report as described here.

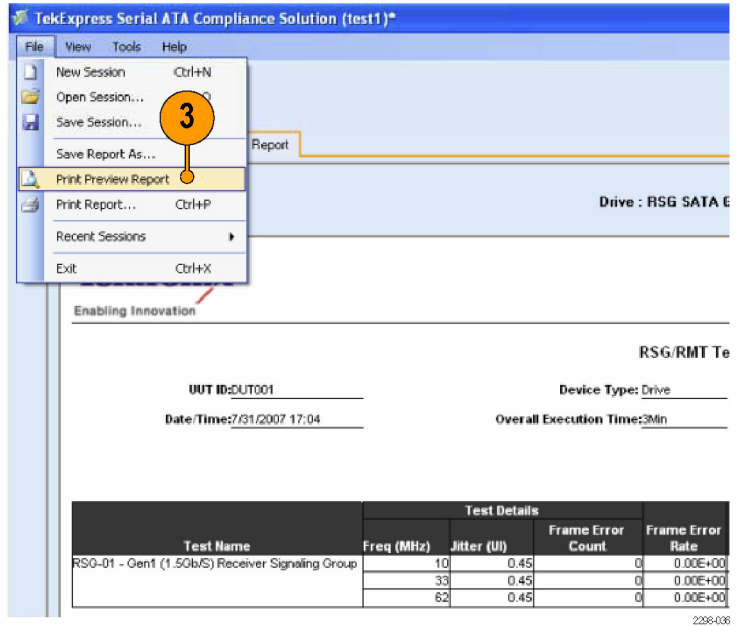
1. After you have successfully run one or more test(s), a report summary is generated in HTML format.



2. To save the report summary in the desired location, select File > Save Report As.

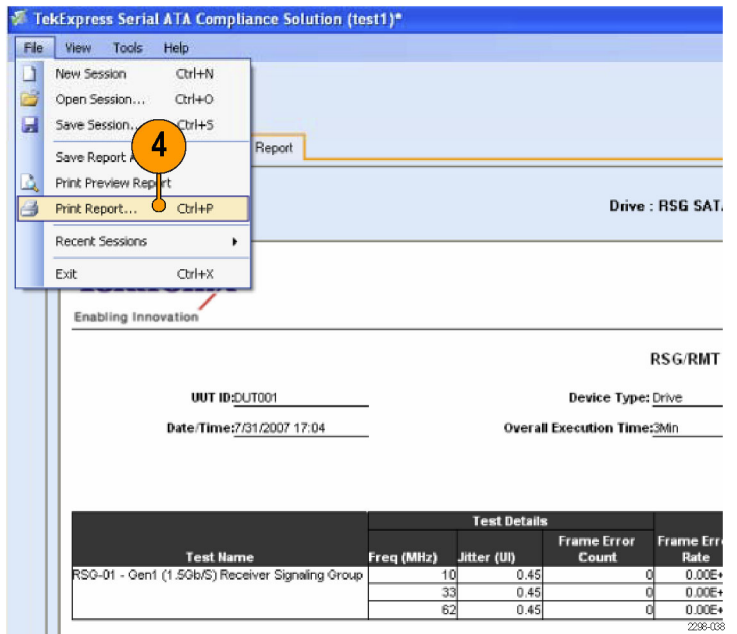


- To preview the report before printing, select **File > Print Preview Report**.



- Select **File > Print Report**.

**NOTE.** Select **View Scorecard** to view the test result in standard specific format.



## Application Examples

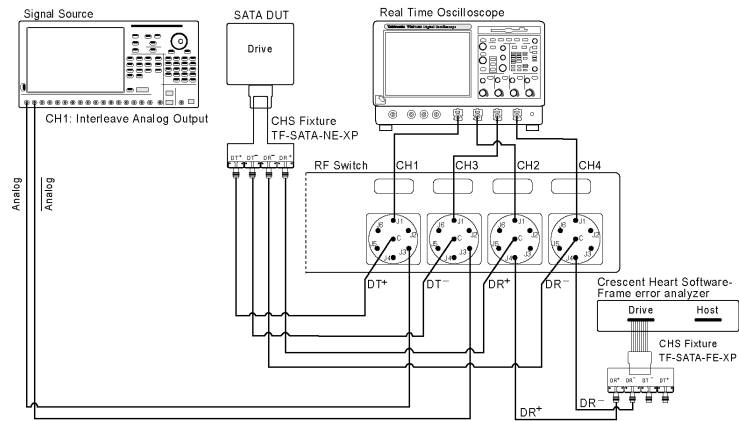
### Testing a Drive for Compliance

This test verifies that the SATA Gen1 Drive device will receive a 1.5 Gbps stressed data pattern without receive errors.

The following equipment is required to set up the DUT:

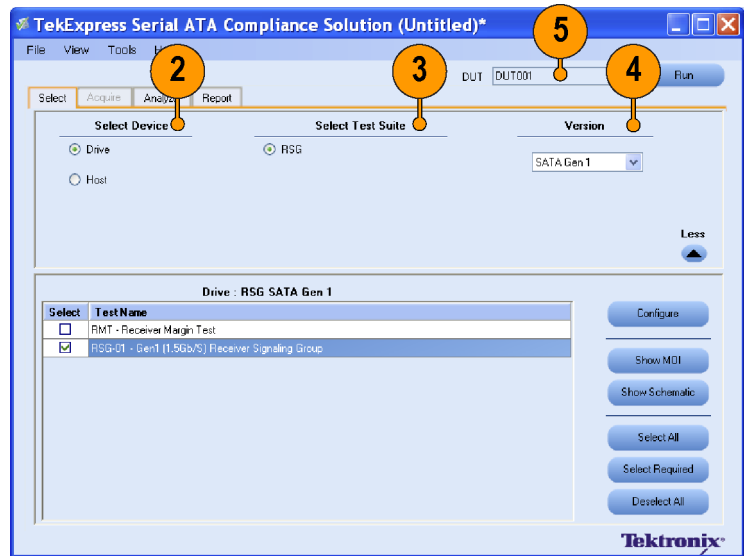
Resource	Model Supported
Signal Source	Tektronix AWG7102 (Option 6)
Real Time Oscilloscope	<ul style="list-style-type: none"> <li>■ Tektronix DPO/DSA 72004, DPO/DSA 71604, DPO/DSA 71254, TDS6154C, TDS6124C</li> <li>■ For Gen1– only testing, the following scopes are also acceptable: DPO/DSA 70804 or TDS6804B</li> </ul>
RF Switch	Keithley S46
Frame Error Analyzer	Crescent Heart Software SATA II probe adapter
Test Fixture	Crescent Heart Software Fixture TF-SATA-NE-XP, TF-SATA-FE-XP
DUT	A SATA Drive to test

1. Connect the DUT to the equipment as shown in the connection diagram.



- (A) If DUT Power Cycle Sequence is automated using DC output of Signal Source then
  - Connect Channel-1 of DC output to pin #14 (and pin #15 to GND) in case of 20 pin Molex connector of AT/ATX power supply
  - Connect Channel-1 of DC output to pin #16 (and pin #17 to GND) in case of 24 pin Molex connector of AT/ATX power supply
- (B) On RF-Switch all unused switch points are recommended to close with 50 Ohm terminator.
- (C) On CHS Test Fixtures all unused ports are recommended to close with 50 Ohm terminator.

2. Select **Drive** as the device type.
3. Select **RSG** as the Test Suite.
4. Select **SATA Gen 1** as the test suite version.
5. Enter the DUT ID in the DUT field.



2298-032

6. If you want to verify the test setup before running the tests, click **Show Schematic**.

7. Select **RSG-01 – Gen 1 (1.5 Gb/S) Receiver Signalling Group**.

*NOTE. RSG-01- Gen 1 (1.5 Gb/Sec) Receiver Signalling Group will be a compliance test which is a mandatory test.*

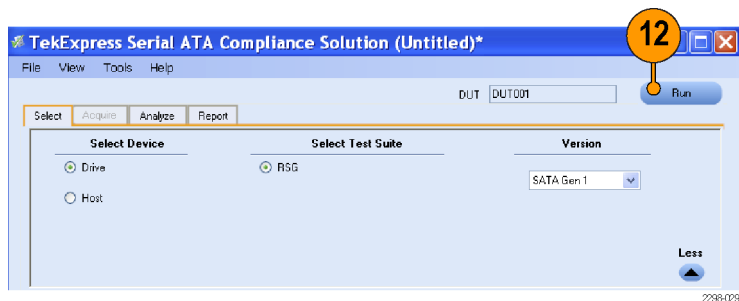
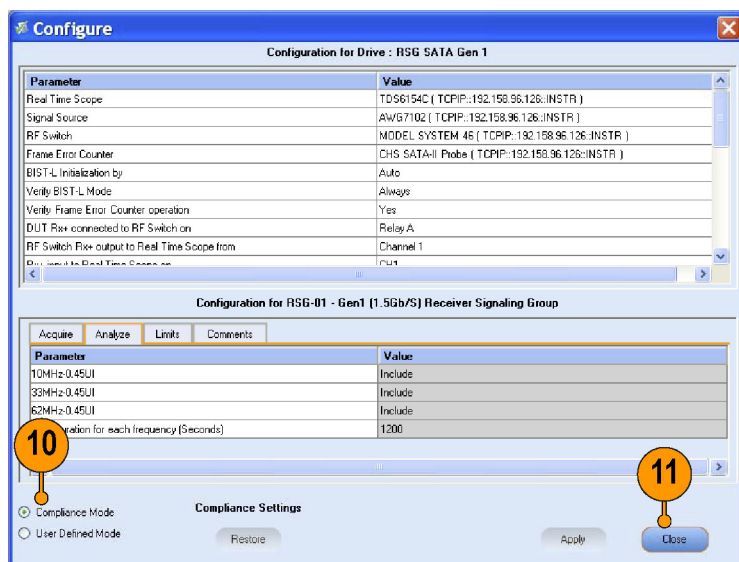
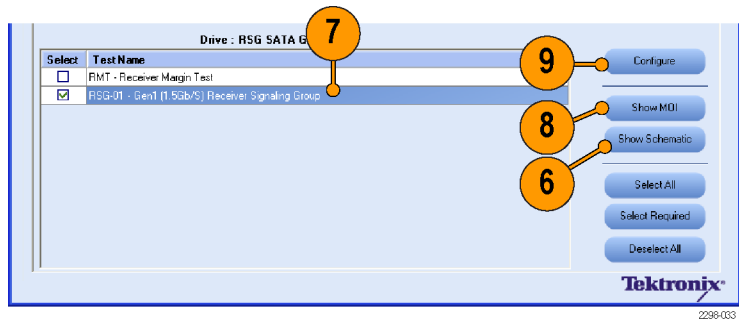
8. To view the Method of Implementation for the RSG test, click **Show MOI** in the application.

9. Click **Configure** to open the Configuration panel.

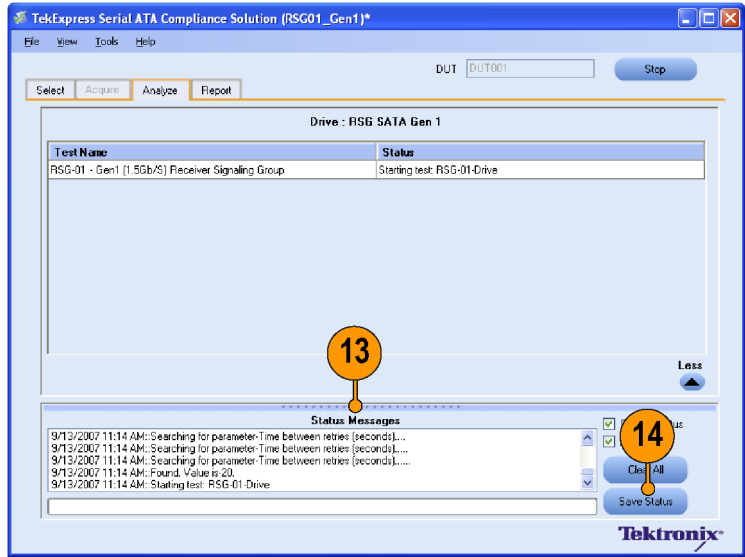
10. You can generally use the default values in the **Compliance Mode**.

11. Click **Close**.

12. Click **Run** to run the test.

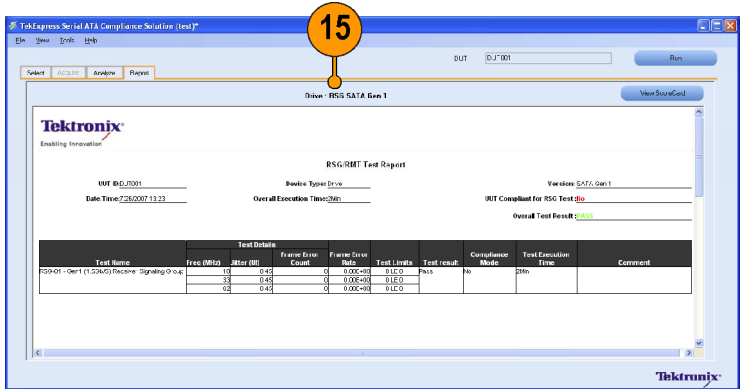


13. Observe that only the **RSG-01– Gen 1 (1.5 Gb/S) Receiver Signalling Group** is checked for compliance. Other tests are skipped. The status of the tests is displayed in the **Status Messages** window.
14. Click **Save Status** to save the status messages.



2298-048

15. When the tests run successfully, a report appears in the **Report** panel.



2298-027



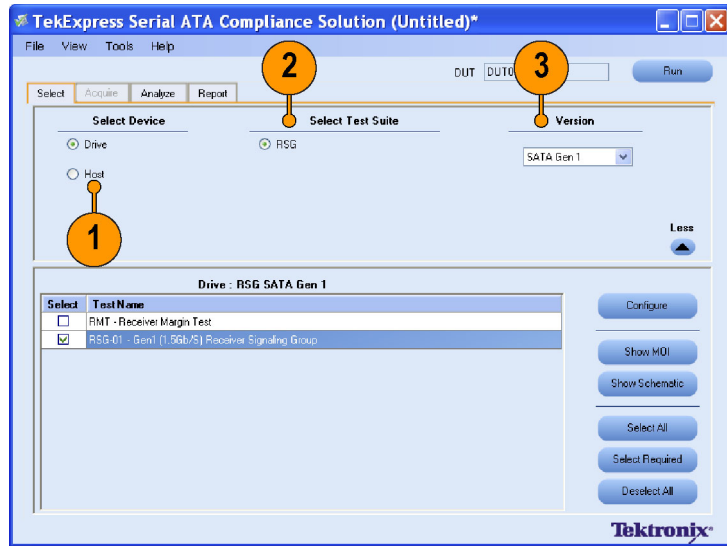
## Testing a Host for Compliance

This test verifies that the SATA Host device will receive a 3.0 Gbps stressed data pattern without receive errors.

The following equipment is required to set up the DUT:

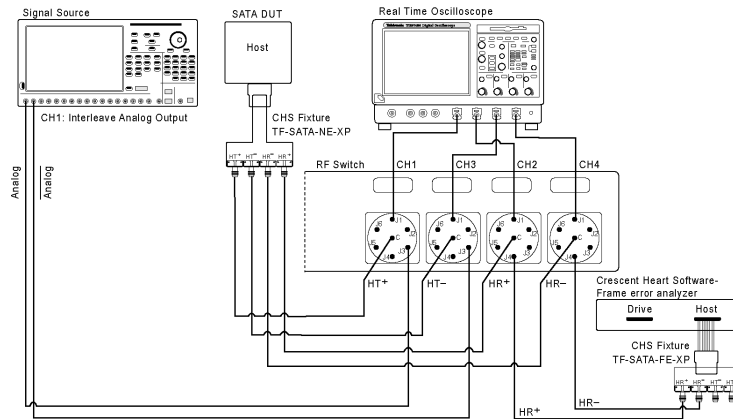
Resource	Model Supported
Signal Source	Tektronix AWG7102 (Option 6)
Real Time Oscilloscope	<ul style="list-style-type: none"> <li>■ Tektronix DPO/DSA 72004, DPO/DSA 71604, DPO/DSA 71254, TDS6154C, TDS6124C</li> <li>■ For Gen1- only testing, the following oscilloscopes are also acceptable: DPO/DSA 70804 or TDS6804B</li> </ul>
RF Switch	Keithley S46
Frame Error Analyzer	Crescent Heart Software SATA II probe adaptor
Test Fixture	Crescent Heart Software Fixture TF-SATA-NE-XP, TF-SATA-FE-XP
DUT	A SATA Host to test

1. Select **Host** as the device type.
2. Select **RSG** as the test suite.
3. Select **SATA Gen 2** as the test suite version.



2298-030

4. Connect the DUT to the equipment as shown in the setup diagram.

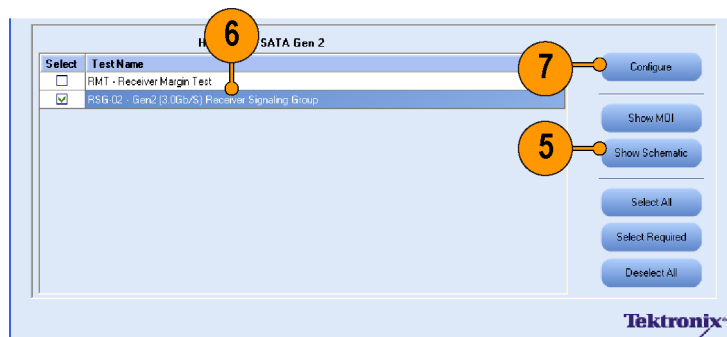


- (A) If DUT Power Cycle Sequence is automated using DC output of Signal Source then  
 - Connect Channel-1 of DC output to pin #14 (and pin #15 to GND) in case of 20 pin Molex connector of AT/ATX power supply  
 - Connect Channel-1 of DC output to pin #16 (and pin #17 to GND) in case of 24 pin Molex connector of AT/ATX power supply  
 (B) On RF-Switch all unused switch points are recommended to close with 50 Ohm terminator.  
 (C) On CHS Test Fixtures all unused ports are recommended to close with 50 Ohm terminator.

5. To verify the test setup before running the tests, click **Show Schematic**.
6. Select **RSG-02 - Gen2 (3.0Gb/s) Receiver Signalling Group**.

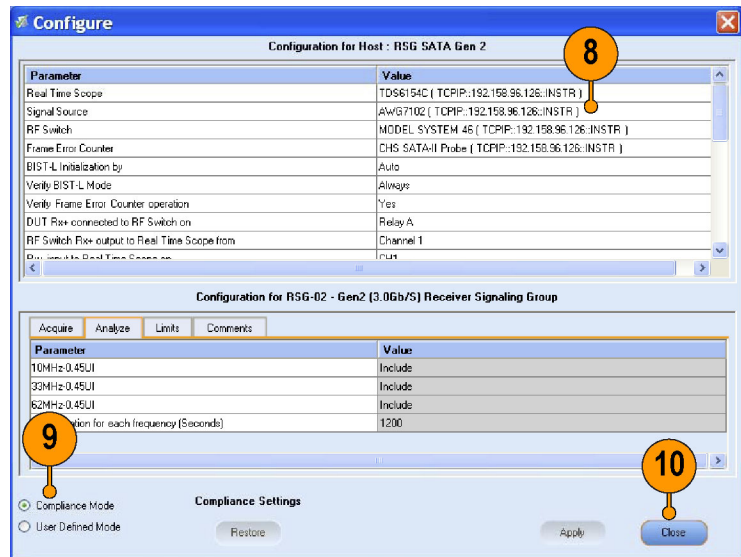
**NOTE.** RSG-02 - Gen 2 (3.0 Gb/s) Receiver Signalling Group is a compliance test.

7. Click **Configure** if you want to configure the test parameters in the Configure panel.



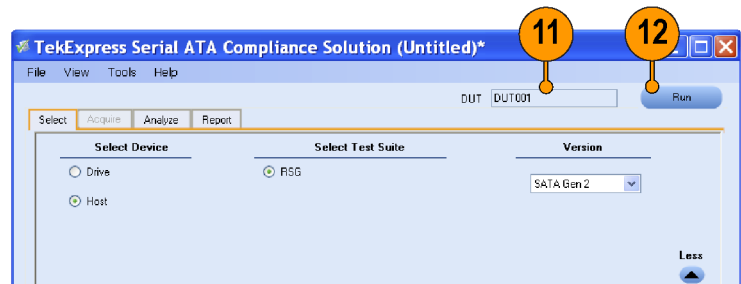
2298-031

8. The general parameters that are not grayed are editable. To change the instrument related values, select from the drop-down list for each of the parameters.
9. You can use the default values in the Compliance mode.
10. Click **Close**.



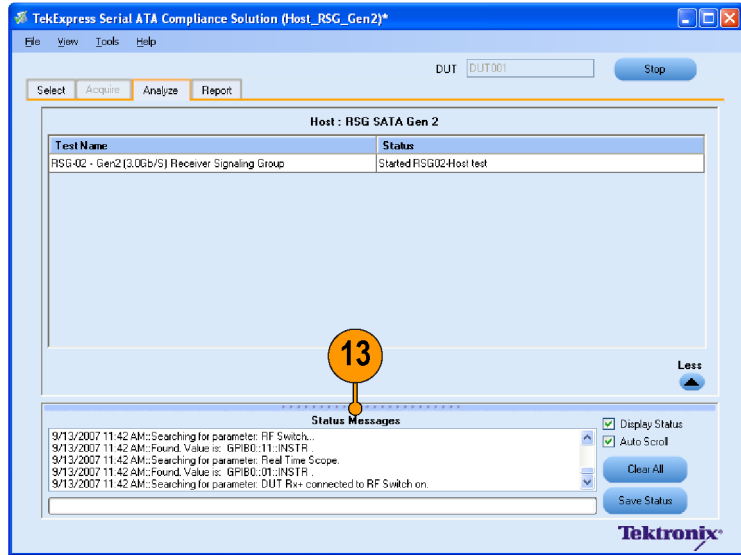
2298-003

11. Enter the DUT ID in the DUT field.
12. Click **Run** to run the tests.



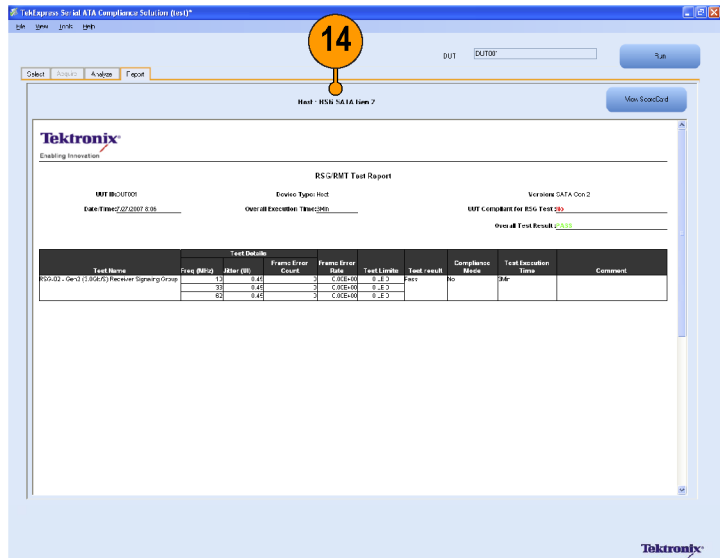
2296-042

- Observe that only **RSG-02 – Gen 2 (3.0 Gb/S) Receiver Signalling Group** is checked for compliance. Other tests are skipped. The status of the tests is displayed under **Status Messages** window.



2298-045

- When the tests run successfully, a report appears in the **Report** panel.



2298-039

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