

D9060GDDC

GDDR6 Tx Compliance Test Software

Test, Debug and Characterize Your GDDR6 Designs Quickly

The Keysight Technologies, Inc. D9060GDDC GDDR6 compliance test application provides a fast and easy way to test, debug and characterize your GDDR6 designs. The tests performed by the GDDR6 compliance test software are based on the JEDEC1 1836.99D Rev 3 (2019) GDDR6 SGRAM Specification. The test application offers a user-friendly setup wizard and a comprehensive report that includes margin analysis. GDDR6 represents an evolutionary upgrade to graphics memory systems with higher data rates while using less power than GDDR5. GDDR6 offers an attractive performance, performance trade-off for many Artificial Intelligence and high-performance computation systems. Signal integrity is crucial for memory system interoperability. Clock measurements help you ensure that the clocks are well within the specifications, which is the key to reliable and interoperable memory systems. At the same time, electrical and timing characteristics of signals are critical as well, to ensure the memory system functions correctly and stays error free. The D9060GDDC GDDR6 compliance test application is compatible with Keysight UXR and Z-Series Infiniium oscilloscopes.



The D9060GDDC GDDR6 compliance test software gives you a fast, easy way to test, debug and characterize designs by performing a combination of clock jitter measurements and electrical tests that evaluate GDDR6 devices per JEDEC specification.

Features

The GDDR6 compliance test application offers several features to simplify the validation of your GDDR6 designs:

- Setup wizard for quick setup, configuration and test
- Execution speed and proven test algorithm for clock test, which minimizes your compliance test time
- User-selected tests and configurations based on JEDEC JEDEC1 1836.99D Rev 3 (2019) GDDR6 SGRAM.
- Test framework provides powerful characterization through multiple trials that show a full array of statistics for each measurement and returns the worst measurement value

Pass #	Failed	# Trials	Test Name	Actual Value	Margin	Pass Limits
1		1	tCK - Rising Edge	4.000 ns		Information Only
1		1	tCK - Falling edge	4.000 ns		Information Only
1		1	tCH	1.998 ns		Information Only
1		1	tCL	2.002 ns		Information Only
1		1	tCKES - Rising	1.002 ns		Information Only
1		1	tCKES - Falling	1.002 ns		Information Only
1		1	tCKEH - Rising	986 ps		Information Only
1		1	tCKEH - Falling	986 ps		Information Only

GDDR6 Test Reports

Comprehensive test coverage

With the GDDR6 compliance test application, you can use the same oscilloscope you use for everyday debugging to perform automated testing and margin analysis based on the JEDEC electrical and timing specifications. The application automatically configures the oscilloscope for each test and provides informative results. It includes margin analysis indicating how close your device comes to passing or failing the test for each specification. Some of the difficulties in performing the compliance tests are connecting to the target device, configuring the oscilloscope, performing the tests and analyzing the measured results. The GDDR6 compliance test application does most of this work for you.

Easy test definition

The test application enhances the usability of Keysight Infiniium oscilloscopes for testing GDDR6 devices. The Keysight automated test framework guides you quickly through the steps required to define the setup, perform the tests and view the test results. You can select a category of tests or specify individual tests. The user interface is designed to minimize unnecessary reconnections, which saves time and minimizes potential operator error. You can save the tests and configurations as project files and recall them later for quick testing and review of previous results.

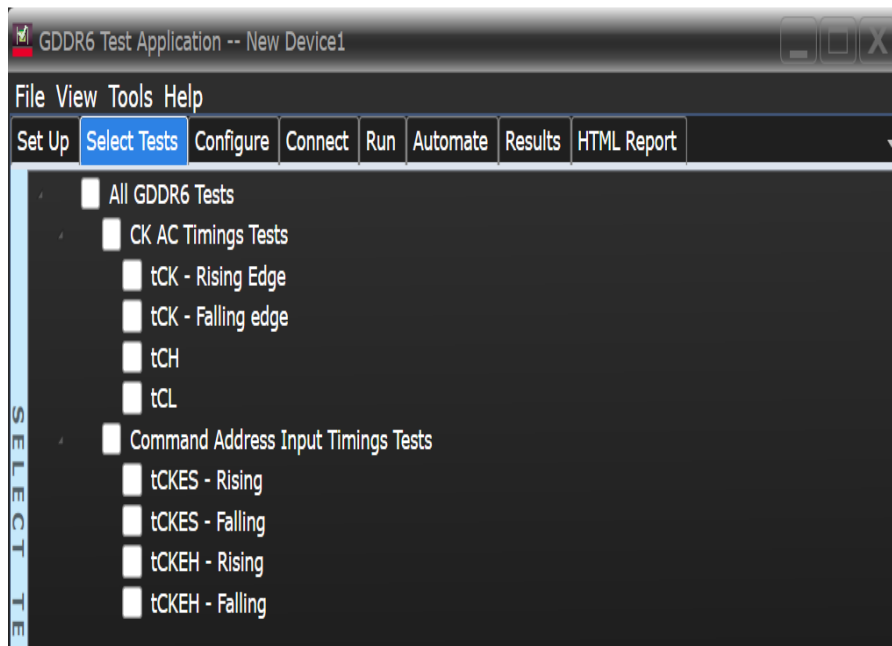


Figure 1. The Keysight automated test engine filters the test selection based on your test setup. You can easily select individual tests or groups of tests with a mouse-click.

Configurability and guided connection

The GDDR6 compliance test application provides flexibility in your test setup. The GDDR6 compliance test application provides you with user-defined controls for critical test parameters such as voltage threshold values, a single waveform is used for analysis and customizable violation settings. Once you have configured the tests, the connection page will display the connection diagram for the test you have selected. With the multiple test trial capability, you can extensively characterize the performance of your GDDR6 devices. You can run the selected tests until the stop condition is met. The application will then save the worst-case conditions and help you track down the anomalies in your signals.



Figure 2. The software provides user-defined controls for test parameters such as voltage threshold values

In addition to providing you with measurement results, the D9060GDDC GDDR6 compliance test application reports how close you are to the specified limit. You can specify the level at which warnings are to be issued. You are provided with a full array of statistics for each measurement, and you can save worst-case conditions to extensively test the performance of your device.

Test Report

Overall Result: **PASS**

Test Configuration Details	
Application	
Name	D9060GDDC GDDR6 Test Application
Version	0.99.9013.0
Device Description	
Test Mode	Live Signal
Data Rate [MT/s]	2000
Clocking Mode	DDR
POD Standard	POD135
Test Session Details	
Infiniium SW Version	06.55.00504
Infiniium Model Number	DSOX96204Q
Infiniium Serial Number	No Serial
Debug Mode Used	No
Compliance Limits	GDDR6 Specification (official)
Last Test Date	2020-05-19 20:04:14 UTC +08:00

Summary of Results

Test Statistics

Failed	0
Passed	8
Total	8

Margin Thresholds

Warning	< 5 %
Critical	< 0 %

Pass	# Failed	# Trials	Test Name	Actual Value	Margin	Pass Limits
①		1	tCK - Rising Edge	4.000 ns		Information Only
①		1	tCK - Falling edge	4.000 ns		Information Only
①		1	tCH	1.998 ns		Information Only
①		1	tCL	2.002 ns		Information Only
①		1	tCKES - Rising	1.002 ns		Information Only
①		1	tCKES - Falling	1.002 ns		Information Only
①		1	tCKEH - Rising	986 ps		Information Only
①		1	tCKEH - Falling	986 ps		Information Only

Figure 3. The GDDR6 test application documents your test parameters, pass or fail status, test specification range, measured values and pass/fail margin.

Thorough performance reporting

The D9060GDDC GDDR6 compliance test application generates thorough HTML reports that capture the performance, status and margins of your device. It also captures screen shots of critical measurements for your reference and documentation. This report is suitable for printing and sharing with your vendors, customers or colleagues.



Figure 4. The test application generates a summary report where you can see your device's test results quickly and clearly. Details are available for each test including the test limits, test description and test results, including saved waveforms. In addition, the pass/ fail margin is indicated to give you further insight. Images are included on applicable parameters.

Recommended oscilloscopes

The GDDR6 compliance software is compatible with Keysight Infiniium UXR-Series oscilloscopes with operating software revision v10.20 or higher or Z-series oscilloscopes with v6.55 or higher. For oscilloscopes with earlier revisions, free upgrade software is available here: www.keysight.com/find/scope-apps-sw.

Data Rate	Minimum Bandwidth	Minimum Channels	Compatible Oscilloscopes
Up to 12 GT/s	25 GHz	4 ¹	Infiniium UXR or Z-Series
Up to 16 GT/s	33 GHz	4 ¹	Infiniium UXR or Z-Series

1. Test "tDIPW" requires qty(4) probes, other tests require qty (1) to (2) probes.

Ordering Information

Software

Model Number	Description	Note
D9060GDDC	GDDR6 Compliance Test Software	Required
D9020JITA	Jitter, Vertical and Phase Noise Analysis Software	Required
D9020SCNA	InfiniiScan Event Identification Software	Required
D9020ASIA	Advanced Signal Integrity Software (EQ, InfiniiSim Adv, Crosstalk)	Optional

Examples of Hardware Configurations

Maximum bandwidth for testing possible when GDDR6 CK stays on

Model Number	Description	Quantity
UXR0334A	33 GHz Infiniium oscilloscope	1
N2803A	30 GHz RCRC probe amplifier	4
N5445A	30 GHz browser	4
N2787A	3D probe positioner	4

Reduced bandwidth, for testing GDDR6 systems where CK turns off/on

Model Number	Description	Quantity
UXR0254A	25 GHz Infiniium oscilloscope	1
MX0023A	25 GHz RC probe amplifier	4
MX0100A	Micro Probe head kit (includes qty (5) probe heads and qty (1) bullet adapter)	1
MX0103A	Bullet Adapter	3

Related Literature

Publication Title	Publication Number
Keysight Infiniium UXR-Series Oscilloscopes - Data Sheet	5992-3132EN
Infiniium Z-Series Oscilloscopes - Data Sheet	5991-3868EN
InfiniiMax III/III+ Probing System - Data Sheet	5990-5653EN
Infiniium Oscilloscope Probes and Accessories - Data Sheet	5968-7141EN
Keysight InfiniiScan Event Identification Software for Infiniium Series	5992-3377EN
Jitter, Vertical and Phase Noise Analysis Software for 90000, V-, Z- and UXR-Series Oscilloscopes - Data Sheet	5992-3376EN
Advanced Signal Integrity Software (EQ, InfiniSim Adv, Crosstalk) - Data Sheet	5992-3383EN

Flexible Software Licensing and KeysightCare Software Support Subscriptions

Keysight offers a variety of flexible licensing options to fit your needs and budget. Choose your license term, license type, and KeysightCare software support subscription.

License terms

Perpetual – Perpetual licenses can be used indefinitely.

Subscription – Subscription licenses can be used through the term of the license only (6, 12, 24, or 36 months).

License types

Node-locked – License can be used on one specified instrument/computer.

Transportable – License can be used on one instrument/computer at a time but may be transferred to another using Keysight Software Manager (internet connection required).

USB Portable – License can be used on one instrument/computer at a time but may be transferred to another using a certified USB dongle (available for additional purchase with Keysight part number E8900-D10).

Floating (single site) – Networked instruments/computers can access a license from a server one at a time. Multiple licenses can be purchased for concurrent usage.

KeysightCare Software Support Subscriptions

Perpetual licenses are sold with a 12 (default), 24, 36, or 60-month software support subscription. Support subscriptions can be renewed for a fee after that.

Subscription licenses include a software support subscription through the term of the license.

Selecting your license

Step 1. Choose your software product (eg. D9060GDDC).

Step 2. Choose your license term: perpetual or subscription.

Step 3. Choose your license type: node-locked, transportable, USB portable, or floating.

Step 4. Depending on the license term, choose your support subscription duration.

KeysightCare Software Support Subscription provides peace of mind amid evolving technologies.

- Ensure your software is always current with the latest enhancements and measurement standards.
- Gain additional insight into your problems with live access to our team of technical experts.
- Stay on schedule with fast turnaround times and priority escalations when you need support.

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