

Ensuring Compliance and Interoperability in DDR Designs

Tutorial

Automating compliance measurements

The Joint Electronic Devices Engineering Council (JEDEC) specification requires a large number of test parameters to be verified for DDR compliance – a time-consuming exercise if you make the measurements manually. In addition to characterizing every test parameter, you must record the measurements and format them into a test report. To improve productivity, engineers need a way to automate measurements.

You can reduce the amount of time and effort spent characterizing your device against the JEDEC specification with automated DDR compliance test applications for oscilloscopes and logic analyzers. Using automated routines, you can repeat measurements of every test parameter many times to analyze the signal thoroughly and provide complete statistical results. You can also acquire screen captures of worst-case results. Many applications automatically generate comprehensive test reports for archiving or sharing. (See Figure 1.)

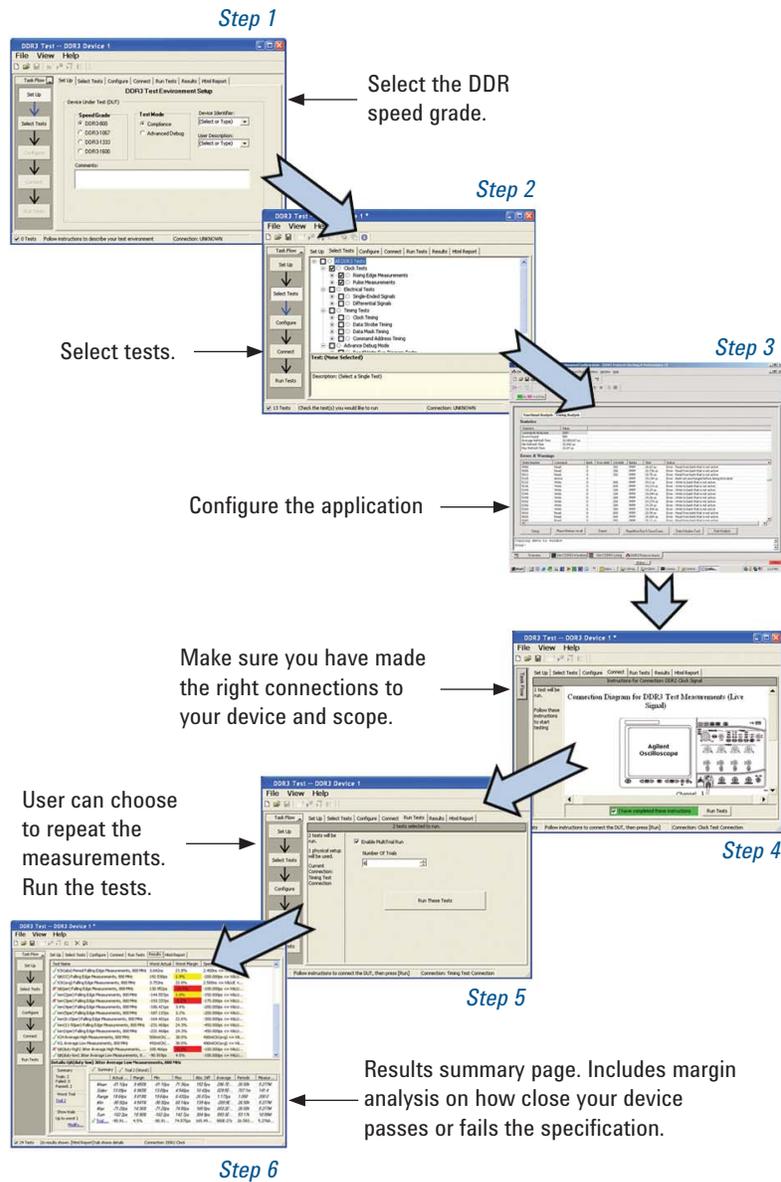


Figure 1. Agilent DDR compliance software provides a familiar and user-friendly interface to streamline test, debug and characterization of DDR designs.



Agilent Technologies

For example, Agilent's DDR compliance test software lets you quickly perform automated measurements for low power DDR, DDR1, DDR2 and DDR3 specifications, review pass, fail and margin analysis results summarized in an HTML report, and check acquired data for protocol and timing violations. The analysis tool also executes several performance measurements.

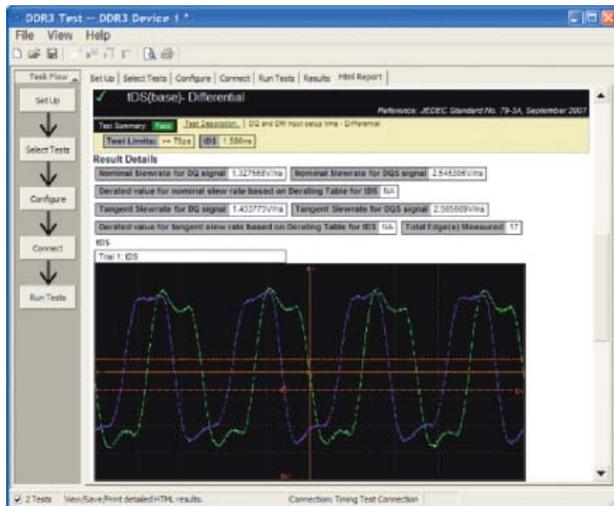


Figure 2. Quickly perform automated measurements for low power DDR and DDR1, 2 and 3 specifications.

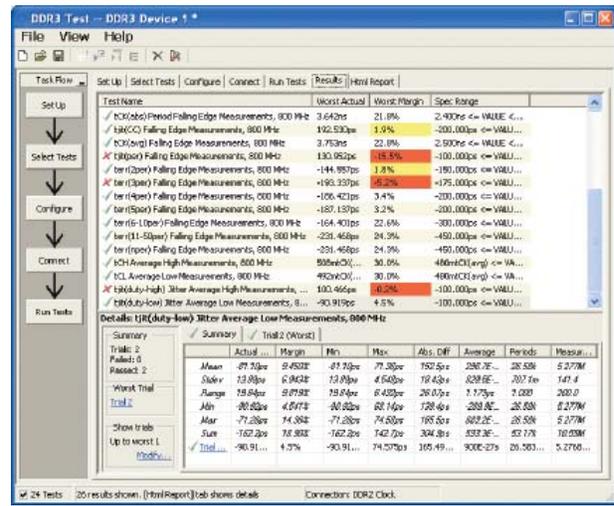


Figure 3. Review pass, fail and margin analysis results summarized in HTML format.

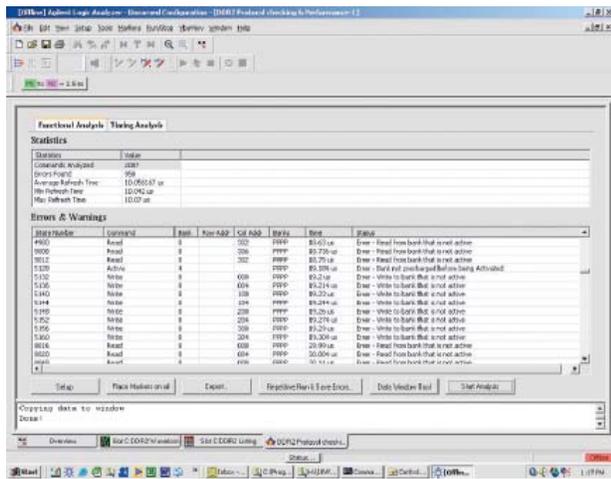


Figure 4. Check acquired data for protocol and timing violations. The analysis tool also executes several performance measurements.

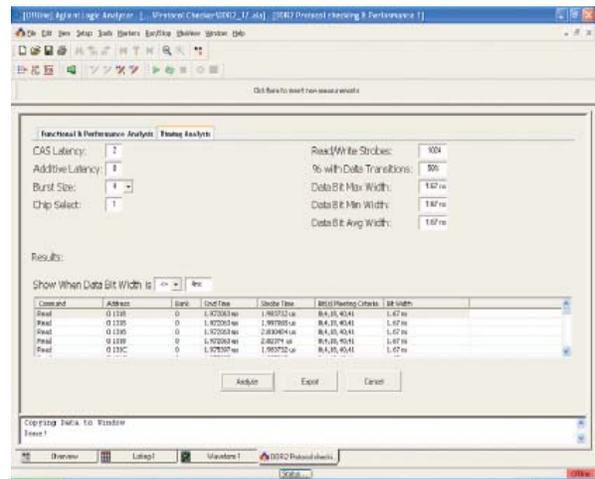


Figure 5. Timing analysis to detect data width that doesn't match specification.

DDR Compliance Test Features and Capabilities

What features and capabilities will help you be the most productive when testing your devices for compliance with the JEDEC specification? Here's a checklist:

- Wizard-based user interface for quick setup, configuration and testing
- Automated clock, electrical and timing measurements based on JEDEC specifications
- Automated eye-diagram analysis with user-configurable mask testing
- Automated derating table analysis based on signal slew rate for setup and hold time measurements
- Multiple RANK testing built in to the application
- User-customizable speed for testing embedded design

- User-configurable signal threshold settings (for example: Vref, Vih and Vil parameters)
- Ability to repeat measurements based on user settings and receive results with statistical analysis of all runs and worst-case screenshots
- Results summary that includes results, specifications and margin analysis
- HTML test report automatically generated, including screenshots for easy sharing and archiving

Automating measurements provides the quickest way to characterize and validate integrity for DDR signals – and lets you shift your focus from making measurements to using the results to improve your designs.

Related Literature

Publication title	Publication type	Publication number
<i>DDR Memory Overview, Development Cycle and Challenges</i>	Tutorial	5990-3180EN
<i>DDR Design and Verification through Simulation</i>	Tutorial	5990-3317EN
<i>DDR Probing for Physical Layer and Functional Testing</i>	Tutorial	5990-3182EN
<i>Debugging Signal Integrity and Protocol Layers on DDR Designs</i>	Tutorial	5990-3189EN
<i>Identifying the Causes of DDR Data Corruption and Elusive Failures</i>	Tutorial	5990-3183EN
<i>Separating Read/Write Signals for DDR DRAM and Controller Validation</i>	Tutorial	5990-3187EN
<i>Agilent DDR Memory Solutions</i>	Brochure	5990-3324EN

www.agilent.com
www.agilent.com/find/DDR

 **Agilent Email Updates**

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

 **Agilent Direct**

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

Agilent
Open 

www.agilent.com/find/open
Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

LXI

www.lxistandard.org
LXI is the LAN-based successor to GPIB, providing faster, more efficient connectivity. Agilent is a founding member of the LXI consortium.

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements. For information regarding self maintenance of this product, please contact your Agilent office.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

Product specifications and descriptions in this document subject to change without notice.

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas

Canada	(877) 894-4414
Latin America	305 269 7500
United States	(800) 829-4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	01 36027 71571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700
Germany	07031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European Countries:

www.agilent.com/find/contactus

Revised: October 6, 2008

© Agilent Technologies, Inc. 2008
Printed in USA, December 19, 2008
5990-3188EN



Agilent Technologies Oscilloscopes

Multiple form factors from 20 MHz to >90 GHz | Industry leading specs | Powerful applications



Agilent Technologies