



## **Agilent U7231A DDR3 Compliance Test Application Software Release Notes**

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### **Agilent U7231A Software Version 01.72**

**Released Date: 20 November 2011**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),  
3.11 (90000 series, 9000 series)**

**File Name: SetupInfDDR30172.exe**

#### Bug Fixes:

- Resolved the issue of the Vix test where an exception is thrown due to error in loading some internal waveform files.
- Resolved the issue of the tLZDQ test where previously the algorithm for this test cannot handle data burst with the transition of the DQ signal going from Hi-Impedance to a logic High state.
- Resolved the issue not able to correctly identify valid data burst from a selected rank when the "Write Preamble Pattern" configuration option is set to "DDR2". This issue affected all the WRITE test as previously the application will use one additional clock period more than the entered WRITE latency value when trying to identify the required rank data burst under the mentioned settings.
- Resolved the issue where all the Eye Diagram Tests does now work with baseline version 3.20 and above.
- Resolved the issue regarding Eye Diagram Tests where an error exception regarding number of waveforms acquired is thrown when the data burst signal is triggering at more than 2 seconds apart.

### **Agilent U7231A Software Version 01.71**

**Released Date: 20 October 2011**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),  
3.11 (90000 series, 9000 series)**

**File Name: SetupInfDDR30171.exe**

#### Additions:

- New tests added under Timing Tests group: tQSH and tQSL.
- Added new configuration option, "Write Preamble Pattern" where user can select the expected Write Preamble pattern.



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- Added 1866 and 2133 Mt/s selection in the custom mode speed grade drop down list.
- Added support for using the Precision Probe feature where this option is accessible via the Tools menu of the application.
- Added support for Windows 7 operating system.
- Added new “Acquisition Setup ...” menu under the Tools menu of the application where user can enable or disable the acquisition bandwidth limiting feature. This option is only available under the application Debug mode that can be set under the “Configure” tab of the application.

### Bug Fixes:

- Resolved the issue of reporting the wrong Speed Grade selection in Html report.
- Corrected the report display item for all relevant Timing Tests where the report label “Sample Length (UI)” is replaced by “Sampling Points (Pts)”. Due to this change, when loading supported legacy saved project files (version 1.70), all the saved test results that has the “Sample Length (UI)” report item will need to be removed before performing any new test trial to prevent test report item conflict error to occur.
- Resolved the issue of VOLdiff(AC) where the test was performing VOHdiff(AC) instead of the VOLdiff(AC) measurement.
- Resolved the issue of SRQdiffF where the test was performing SRQdiffR instead of the SRQdiffF measurement.
- Resolved the issue of finding the incorrect worst case value for all the timing test results that are reported in terms of tCK or tCK(avg) unit.
- Resolved the issue of having a time-out exception thrown when the application is trying to query an InfiniiSim command (eg. “:CHANnelx:ISIM:STATe?”) from a scope that does not support this feature.
- Resolved the issue of not retaining the saved “Derate Table File” info that is configurable under the “Custom” test mode when loading a saved project file. This fix will ensure that the app will use the saved “Derate Table File” info according to the saved project file.
- Resolved the issue of VILdiff.CK(AC) and VILdiff.DQS(AC) using incorrect dynamic test limits.

### Modifications:

- Removed the InfiniiSim button from the Setup tab of the app as this feature is now accessible via the Tools menu of the application.



**Agilent U7231A Software Version 01.70**

**Released Date: 20 June 2011**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),  
2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30170.exe**

Additions:

- Added support for DDR3-1866 and DDR3-2133 under the compliance tests mode.
- Added support for DDR3L under the SDRAM Type option.
- The reference document for DDR3 and DDR3L tests are JESD79-3E and JESD79-3-1 respectively.
- New tests added under Electrical Tests group:  
VSEH & VSEL for Clock and DQS,  
VIHdiff & VILdiff for Clock and DQS,  
VOHdiff & VOLdiff,  
SRQdiffR, SRQdiffF,  
tDIPW.
- Added new configuration option, "Min Data Amplitude" where user can set the minimum amplitude of Data burst (DQ/DM) during Read/Write burst separation in order to differentiate between valid data and noise.
- Added new "Threshold Setting" configuration wizard in the Setup tab of the application.
- Added new configuration options as follow for burst trigger threshold purposes.
  1. BurstTriggerTopRatio\_Chan1
  2. BurstTriggerBaseRatio\_Chan1
  3. BurstTriggerTopRatio\_Chan2
  4. BurstTriggerBaseRatio\_Chan2
  5. BurstTriggerTopRatio\_Chan3
  6. BurstTriggerBaseRatio\_Chan3
  7. BurstTriggerTopRatio\_Chan4
  8. BurstTriggerBaseRatio\_Chan4
- Added new configuration option, "VTT" as reference voltage for all the output tests.

Bug Fixes:



- Resolved the issue of Eye Diagram reporting error message when different PUT or supporting pin is selected without deleting the previous trial result.
- Resolved the missing image issue found from loading an exported MHT file on a PC system other than the scope.
- Resolved the issue of tQH test reporting error message “Index out of range” by ignoring the first DQS edge of a burst.
- Resolved the issue of tDQSS test reporting error message “Index out of range” due to incorrect internal threshold values.

#### Modifications:

- In order to support multi-AC levels as specified in the JESD79-3E and JESD79-3-1 documents, the following tests have been updated to use dynamic limit feature instead of the previous fixed limit value.
  1. All VIH/VIL tests.
  2. tDS/tDH tests (with/without derating feature support).
  3. tIS/tIH tests (with/without derating feature support).
- Changed the label of “ThresSetMode” configuration option from “Trigger Threshold Setting” with “Auto or Manual” options to “Threshold Mode” with “TopBaseRatio or Custom Threshold” options.
- User configuration options for AC/DC levels option are updated to support different AC options available under the JESD79-3E and JESD79-3-1 documents. Affected configuration options are listed as follow.
  1. InputThreshold\_Vih\_dc [OLD] - Removed
  2. InputThreshold\_Vih\_ac [OLD] - Removed
  3. InputThreshold\_Vil\_dc [OLD] - Removed
  4. InputThreshold\_Vil\_ac [OLD] – Removed
  5. InputRefV\_Vref [OLD] – Removed
  6. InputThreshold\_Vih\_dc\_DQ [NEW]
  7. InputThreshold\_Vih\_ac\_DQ [NEW]
  8. InputThreshold\_Vil\_dc\_DQ [NEW]
  9. InputThreshold\_Vil\_ac\_DQ [NEW]
  10. InputThreshold\_Vih\_dc\_CA [NEW]
  11. InputThreshold\_Vih\_ac\_CA [NEW]
  12. InputThreshold\_Vil\_dc\_CA [NEW]
  13. InputThreshold\_Vil\_ac\_CA [NEW]
  14. InputRefV\_VrefCA [NEW]
  15. InputRefV\_VrefDQ [NEW]
  16. InputRefV\_VTT [NEW]
  17. VIHdiff\_ac\_CK [NEW]
  18. VILdiff\_ac\_CK [NEW]
  19. VIHdiff\_ac\_DQS [NEW]



20. VILdiff_ac_DQS	[NEW]
21. VOHdiff_ac	[NEW]
22. VOLdiff_ac	[NEW]

- Clock and DQS pins are removed from VIH&VIL tests due to the tests addition of VSEH & VSEL.
- Separated the measurement and triggering thresholds settings to “Signal Measurement Threshold Settings” and “Burst Trigger Threshold Settings” respectively.
- Increased test execution speed especially for multi-bursts testing.
- Sampling points setting affects all the tests rather than Timing tests only.
- Due to the major code re-structuring, the entire legacy saved project will be loaded as READ-ONLY for viewing purposes. User will not be able to append new test results to the legacy saved projects as the number of reported items for each of the tests may have changed.

### **Agilent U7231A Software Version 01.60**

**Released Date: 16 March 2011**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30160.exe**

#### Additions:

- Added support for the InfiniiSim “4 Port 1 Channel” option.
- Added derating feature support. 4 new tests that support this feature are added; tDS-Diff(derate), tDH-Diff(derate), tIS(derate) and tIH(derate).
- Added multi-burst support feature with statistic reporting.
- Added “2T timing” support feature for tIS/tIS(derate) tests.
- Added new configuration option for all the Command and Address Timing tests where user can specify what type of edges (rising only, falling only, both) to process when running tIS/tIH tests.

#### Bug Fixes:

- Resolved the issue of InfiniiSim settings being cleared during a scope reset when running the Timing tests.

#### Modifications:

- Labeled all signals in the screenshot for all Electrical tests.
- Updated the tDQSCK test to process the rising DQS edge only instead of both rising and falling DQS edges.



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- Due to the major code re-structuring done on the Electrical Test group, all the legacy saved project will be loaded as READ-ONLY for viewing purposes. User will not be able to append new test results to the legacy saved projects as the number of reported items for each of the tests may have changed.

### **Agilent U7231A Software Version 01.52**

**Released Date: 04 October 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30152.exe**

#### Additions:

- Supports the Infiniium DSO-X 90000 Series High Performance Oscilloscope.
- The application will now require Microsoft's .net framework 3.5 to be installed on the scope in order to run.

### **Agilent U7231A Software Version 01.51**

**Released Date: 30 July 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30151.exe**

#### Additions:

- Added new "Burst Length Limit" features when performing the READ/WRITE eye diagram tests.

#### Modifications:

- Updated the tDH measurement to only process the closest DQS edge that are located prior to a DQ edge in order to be consistent with the data hold time definition.

### **Agilent U7231A Software Version 01.50**

**Released Date: 23 June 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30150.exe**



#### Modifications:

- Renamed the “Verify Selected Rank Only” configuration option for the Data Strobe Timing and Data Timing test group to “Rank Separation”. New “latency” configuration options are created to support this feature.
- Increased test execution speed for Data Strobe Timing and Data Mask Timing by testing all parameters on the same data burst. The tests are also updated to support and handle any valid back-to-back data burst found when the “Rank Separation” option is enabled.
- Labeled all signals in the screenshot for Data Strobe Timing, Data Mask Timing and Command Address Timing tests.
- Due to the major code re-structuring done on the Timing Test group, all the legacy saved project will be loaded as READ-ONLY for viewing purposes. User will not be able to append new test results to the legacy saved projects as the number of reported items for each of the tests may have changed.

#### **Agilent U7231A Software Version 01.43**

**Released Date: 21 April 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30143.exe**

#### Additions:

- Added new sets of test limits: DDR3L-800/1066/1333/1600 Spec Addendum (Proposed Version).

#### **Agilent U7231A Software Version 01.42**

**Released Date: 31 March 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30142.exe**

#### Modification:

- Updated the Vih(ac) and Vil(ac) tests to indicate that when the PUT is the DQ or DM signal, the voltage level of the test signal at tDS (DM and DQ input setup time in JEDEC specification) should be taken with reference to the DQS signal as the test results.
- Updated the Vih(dc) and Vil(dc) tests to indicate that when the PUT is the DQ or DM signal, the histogram maximum and minimum value of the test signal should be taken respectively within the sampling window (from test signal tDS to tDH with reference to DQS signal) as the test result.



- Updated the Overshoot test to compare the maximum voltage of all acquired waveforms at 10,000UI length with VDD/VDDQ.
- Updated the Undershoot test to compare the minimum voltage of all acquired waveforms at 10,000UI length with VSS/VSSQ.

**Agilent U7231A Software Version 01.41**

**Released Date: 25 February 2010**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30141.exe**

Additions:

- Added new pins for selection, DQS8 and DQ64 - DQ71.

Modification:

- User was unable to select input pin for Input Slew Rate tests. This issue was resolved by adding configuration selections for Input Slew Rate tests.
- Resolved the issue where configurations of Electrical tests were not updated properly after a project loaded.

**Agilent U7231A Software Version 01.40**

**Released Date: 18 December 2009**

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series), 2.10 (90000 series, 9000 series)**

**File Name: SetupInfDDR30140.exe**

Additions:

- Enabled the Signal De-embedding feature where the user can utilize the InfiniiSim function when running the DDR3 tests. However, this feature is not supported for the 80000 series scope.
- Added the new "Rank separation" feature when performing the READ/WRITE eye diagram tests. New "latency" configuration options are created to support this feature.

Modification:

- Removed the (Optional)Eye Diagram Test For Write Cycle(Bubble Filter Mode).





- The application is updated to always use the maximum sampling rate available for a scope when performing all the DDR3 test measurements.
- Resolved the issue where an exception is occasionally thrown on long test runs causing the application to terminate unexpectedly.
- Resolved the tDS/tDH test issue where the wrong READ data cycle is processed instead of a WRITE data cycle when the “Verify Selected Rank Only” option is enabled.

### **Agilent U7231A Software Version 01.30**

**Released Date: 26 June 2009**

**Minimum Infiniium Oscilloscope Baseline Version: 5.70.00 (80000 series), 1.41 (90000 series), 2.00 (9000 series)**

**File Name: SetupInfDDR30130.exe**

#### Additions:

- Enabled the User Defined Limit (UDL) feature where the user can customize the test limits during the DDR3 tests.
- Supports the Infiniium 9000 Series High Performance Oscilloscope.
- Added the “Skip Connection Diagram Prompt” configuration option to disable the connection change prompt during execution of selected tests.
- Added the “Sample Size(UI)” configuration option under the “Data Strobe Timing and Data Timing” test group.

#### Bug Fixes:

- Resolved the issue of not being able to perform signal triggering on signals that have small signal amplitude (< 600mV).

#### Modification:

- Removed the High/Low state ringing tests.
- Removed the Vid and Vox tests from the Electrical Tests group.
- Removed all the “OPTIONAL” tests except for the (Optional)Eye Diagram Test For Write Cycle(Bubble Filter Mode).



- The “Advanced Debug” test mode is renamed to “Custom” test mode.
- The test IDs are updated due to the implementation of the User Defined Limit (UDL) feature in the application.
- The input slew rate tests is updated to be available in the Custom test mode only as there is no test reference found in the JESD79-3C specification.
- Restructure the Vih/Vil tests based on the JESD79-3C specification.
- Renamed Voh/Vol tests based on the JESD79-3C specification.
- Restructured the Overshoot/Undershoot tests based on the JESD79-3C specification.
- The tDQSCK test is moved from the “Clock Timing” test group to the “Data Strobe Timing” test group based on the JESD79-3C specification.
- The tDQSQ, tQH, tHZ(DQ) and tLZ(DQ) tests are moved from the “Data Strobe Timing” test group to the “Data Timing” test group based on the JESD79-3C specification.
- All the tests under the “Clock Tests” test group is moved to the “Clock Timing” test group based on the JESD79-3C specification.
- Removed the speed verification feature from all the Electrical tests.

**Agilent U7231A Software Version 01.20**

**Released Date: 16 May 2008**

**Minimum Infiniium Oscilloscope Baseline Version: 5.30.00 (80000 series),  
1.00 (90000 series)**

**File Name: SetupInfDDR30120.exe**

**Bug Fixes:**

- Fixed bug which caused application to fail to proceed during signal calibration while running on 90000 series oscilloscope with baseline version 1.20.



**Agilent U7231A Software Version 01.11**

**Released Date: 07 March 2008**

**Minimum Infiniium Oscilloscope Baseline Version: 5.30.00 (80000 series),  
1.00 (90000 series)**

**File Name: SetupInfDDR30111.exe**

Additions:

- Added Individual threshold setting for manual “threshold setting mode” specially designed for most embedded user.
- Added InfiniiScan Min/Max setting in the configuration page.
- Added optional Infinite Persistence test for tDQSQ(Read-cycle test) and tDS/tDH(Write-cycle) tests. Infinite Persistence will measure setup and hold time of the respective signals and measure using the histogram mode.
- Added configuration options for Single-Ended Signals (eg. DQS0,Gnd, /DQS0,Gnd) to provide more connection choices for the users.
- Enhanced Eye-diagram analysis. Added configuration option under Advance Debug Mode category – Read/Write Eye-diagram tests. The parameter name is “Total Unit Interval” with defaulted value to 10 UIs. Users are allowed to edit the parameter to any value > 0. \*It is advisable to start with higher UI number and only reduce the UI if the signals unable to obtain a nice Eye-Diagram due to the specific signal behavior.
- Added tangent slew rate for the tDQSQ, tDS, tDH tests. Tangent slew rate and Nominal slew rate will be reported in the test results.
- Added derating table measurement for tDS and tDH tests based on tangent and nominal slew rate. Unmatched slew rate will returned “N/A” in the result table.
- Added total measurement measured for the Timing Tests. This information will be available at test result’s report.



**Agilent U7231A Software Version 01.10**

**Released Date: 11 January 2008**

**Minimum Infiniium Oscilloscope Baseline Version: 5.30.00 (80000 series),  
1.00 (90000 series)**

**File Name: SetupInfDDR30110.exe**

Additions:

- Supports the Infiniium 90000 Series High Performance Oscilloscope.
- Supports the Remote Programming Interface capability.
- Performance enhancement on all the Electrical and Timing tests.
- Added memory depth selection (in bits) for better eye-diagram tests.
- Enable running of all test without any connection prompt during the run in order to let the system run nightly.

**Agilent U7231A Software Version 01.01**

**Released Date: 02 Oct 2007**

**Minimum Infiniium Oscilloscope Baseline Version: 05.30.00**

**File Name: SetupInfDDR30100.exe**

Modification:

- Changes made to address the critical bugs which caused "Query Unterminated" while running the clock jitter test. It totally disabled this group of tests to run. This issue is fixed and currently all clock jitter tests are able to complete the run.

**Agilent U7231A Software Version 01.00**

**Released Date: 23 Aug 2007**

**Minimum Infiniium Oscilloscope Baseline Version: 05.30.00**

**File Name: SetupInfDDR30100.exe**

Initial release.