



Agilent N5413A DDR2 Compliance Test Application Software Release Notes

Agilent N5413A Software Version 02.50

Released Date: 22 February 2010

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),
2.01 (90000 series OR 9000 series)**

File Name: SetupInfDDR20250.exe

Modifications:

- Increased test execution speed for Clock Timing, Data Strobe Timing and Data Mask Timing by testing all parameters on the same burst.
- Labeled all signal in the screenshot for Clock Timing, Data Strobe Timing and Data Mask Timing tests.

Agilent N5413A Software Version 02.42

Released Date: 17 November 2009

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),
2.01 (90000 series OR 9000 series)**

File Name: SetupInfDDR20242.exe

Modifications:

- Enhanced the Overshoot/ Undershoot tests to handle the signal that occasionally fluctuate or exceed adjusted vertical range.
- Enhanced the tQH test to perform measurement on all DQ transition which associates with both rising and falling strobe transition.
- Enhanced to support multilevel signal (signal that have different amplitude among burst).

Agilent N5413A Software Version 02.41

Released Date: 22 June 2009

**Minimum Infiniium Oscilloscope Baseline Version: 5.71.00 (80000 series),
1.41 (90000 series), 2.00 (9000 series)**

File Name: SetupInfDDR20241.exe

Additions:

- Enabled the application to handle Read only or Write only test signal.
- Enabled the InfiniiSim de-embedding function setting of the oscilloscope.
- Added screenshot for clock test tCK(avg).



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- Used oscilloscope's highest available sampling rate for all the tests.

Modifications:

- Updated the $V_{ih}(ac)$ test for DQ and DM signals to take the voltage level of test signal at t_{DS} (DM and DQ input setup time in JEDEC specification) before the DQS midpoint for the high level voltage as the test result.
- Updated the $V_{il}(ac)$ test for DQ and DM signal to take the voltage level of test signal at t_{DS} (DM and DQ input setup time in JEDEC specification) before the DQS midpoint for the low level voltage as the test result.
- Updated the $V_{ih}(dc)$ test for DQ and DM signal to take the minimum of the histogram of the high level voltage value of the test signal within t_{DS} (DM and DQ input setup time in JEDEC specification) before the DQS midpoint to t_{DH} (DM and DQ input hold time in JEDEC specification) after DQS midpoint as the test result.
- Updated the $V_{il}(dc)$ test for DQ and DM signal to take the maximum of histogram of the low level voltage value of the test signal within t_{DS} (DM and DQ input setup time in JEDEC specification) before DQS midpoint to t_{DH} (DM and DQ input hold time in JEDEC specification) after DQS midpoint as the test result.
- Updated the Overshoot Test to compare the maximum voltage of all acquired waveform at 10,000UI length with V_{DD}/V_{DDQ} .
- Updated the Undershoot test to compare the minimum voltage of all acquired waveform at 10,000UI length with V_{SS}/V_{SSQ} .

Agilent N5413A Software Version 02.40

Released Date: 06 March 2009

Minimum Infiniium Oscilloscope Baseline Version: 5.60.00 (80000 series), 1.31 (90000 series)

File Name: SetupInfDDR20240.exe

Additions:

- Enabled the User Define Limit (UDL) for all tests.
- Categorized the Overshoot and Undershoot tests into two groups: (address, control) and (clock, data, strobe, mask).
- Added "Skip Connection Diagram Prompt" configuration option. This option allows users to enable or disable all connection change prompts when running selected tests.
- Added "Skip Error Message" configuration option. This option allows users to enable or disable error message prompt when running selected tests.
- Added test support for DDR2-1066 tests under the compliance test mode. The reference document for this speed grade is the JESD208.



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- The configuration options (in Configure tab) of the selected tests are shown in the test report.

Modifications:

- Renamed “Advanced Debug” test mode to “Custom” test mode.
- Test IDs have been updated for some tests due to the implementation of User Define Limit (UDL) feature.
- Removed all the “Optional” tests.
- Extended the maximum worst trial display and shown images from 25 trials to 64 trials.
- Removed the High/Low State Ringing tests from the Custom (former Advanced Debug) test mode.
- Updated the Vih(dc) test to use the histogram “mode” value as the test result.
- Updated the Vil(dc) test to use the histogram “mode” value as the test result.

Agilent N5413A Software Version 02.30

Released Date: 16 May 2008

Minimum Infiniium Oscilloscope Baseline Version: 5.20.00 (80000 series), 1.00 (90000 series)

File Name: SetupInfDDR20230.exe

Additions:

- Created another category for running characterization mode which is called Multi-trial mode.
- Added multi trial Vix test in M-Mode.
- Added multi trial for tDS and tDH (Differential)
- Added multi trial for tDQSQ
- Added multi trial for tIS and tIH
- Group all Debug mode config parameters.
- Added 3 news config param for M-Mode tests.
(A)Measurement (B)Time (C) Burst
- Adding in signal name for tIS and tIH tests.

Modifications:

- (Internal) Changes InfiniiScan % for Differential and Single-Ended InitScope function.
- Removed (differential) for tAC and tDQSCK
- Adding HOLDoff time of 200ns to Advance tests: tDQSQ, tDH,tDS,tIHIS to prevent certain signal unable to be triggered.



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Agilent N5413A Software Version 02.21

Released Date: 05 February 2008

**Minimum Infiniium Oscilloscope Baseline Version: 5.20.00 (80000 series),
1.00 (90000 series)**

File Name: SetupInfDDR20221.exe

Additions:

- Added Individual threshold setting for the 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 histogram mode.
- Added configuration options for Single-Ended Signals (eg. DQS0,Gnd, /DQS0,Gnd) to provide more connection choices for users.
- Enhanced Eye-diagram analysis. Added configuration option under the 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 are unable to obtain a nice Eye-Diagram due to 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 the 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 N5413A Software Version 02.20

Released Date: 11 January 2008

**Minimum Infiniium Oscilloscope Baseline Version: 5.20.00 (80000 series),
1.00 (90000 series)**



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File Name: SetupInfDDR20220.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 N5413A Software Version 02.11

Released Date: 2 Oct 2007

Minimum Infiniium Oscilloscope Baseline Version: 05.20.00

File Name: SetupInfDDR20211.exe

Modifications:

- Changes made to address 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 the clock jitter tests are able to complete the run.
- Changed terr(6-10per) Rising/Falling Edge Measurements specification from - 600ps - 600ps to -350ps – 350ps and terr(11-50per) Rising/Falling Edge Measurements specification from - 600ps – 600ps to -450ps – 450ps.

Agilent N5413A Software Version 02.10

Released Date: 23 Aug 2007

Minimum Infiniium Oscilloscope Baseline Version: 05.20.00

File Name: SetupInfDDR20210.exe

Additions:

- Added the Timing Tests that consists of Clock Timings, Data Strobe Timings, Data Mask Timing and Command and Address Timings. These tests are available under all test modes.
- Timing Tests are available under the Advance Debug Mode as well. Users may key in customized speed grade value. Test limit for the Advance debug mode will be based on the user defined speed grade value. For example, if the user defined the Speed grade as 430MT/s, then Specification limit of 533 will be used.



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- Renamed Mhz to MT/s to avoid confusion.

Agilent N5413A Software Version 02.01

Released Date: 25 May 2007

Minimum Infiniium Oscilloscope Baseline Version: 05.10.00

File Name: SetupInfDDR20201.exe

Modifications:

- Changes made only impacts the Clock test. The affected tests are **tjit(CC) Rising Edge Measurement, 667Mhz, tjit(CC) Rising Edge Measurement, 800Mhz, tjit(CC) Falling Edge Measurements, 800Mhz**, where the results will return Infinite value such as 9999.9999...ms. This will only happen when the user installs new Software version 0.530. Some code has been fixed in Time Scale, in order to support the new Software version 0.530.

- With this patch (DDR2 2.01), this issue will not occur anymore in both, Software version 5.20 and 5.30.

Agilent N5413A Software Version 02.00

Released Date: 13 Dec 2006

Minimum Infiniium Oscilloscope Baseline Version: 05.10.00

File Name: SetupInfDDR20200.exe

Additions:

- Added the Advance Debug Test Mode that consists of Eye-diagram tests and High/Low state ringing tests. These tests are used by customers to perform the signal evaluations.

- Added the Electrical Tests(Single-Ended Tests & Differential Tests) under compliance test mode to cater for the DDR2-400 Mhz, DDR2-667Mhz and DDR2-800Mhz. Test limits are based on the DDR2-SDRAM specification: *JEDEC Standard No. 79-2C*.

- Added test limits checking for the Clock Tests based on the Intel DDR2 667/800 JEDEC Specification Addendum document. Clock Tests are only available under DDR2-667 and DDR2-800 speed grade for the compliance testing.

Modifications:

- Removed the Slew Rate (Rising Edge & Falling Edge) tests from the Clock Tests.



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Agilent N5413A Software Version 01.12

Released Date: 18 Sept 2006

Minimum Infiniium Oscilloscope Baseline Version: 05.10.00

File Name: SetupInfDDR20112.exe

Additions:

- Initial released version of the Clock Tests.
- Used for the test characterization purpose. Compliance test limits were not available in the Intel DDR2 667/800 JEDEC Specification Addendum document during the release of this application version.

Modifications:

- Update to 1.0 specification
- 'Acquired cycles' count persists across appended runs. Previously, it used to reset across appended runs.
- Slew rate test markers are placed correctly at the thresholds where the measurement is made. Previously, the markers were not correctly placed.
- The results screen is updated immediately after the end of the run. Previously, it only updates after you click 'OK' at the end of the run.

Agilent N5413A Software Version 01.00

Released Date: 08 June 2005

Minimum Infiniium Oscilloscope Baseline Version: 04.02

File Name: SetupInfDDR20100.exe

Initial release.