



Serial ATA International Organization

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Serial ATA Interoperability Program ULINK MOI for Digital Test

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Revision History

Revision	Date	Comments
0.1	01/19/2006	Initial draft
0.2	01/28/2006	Use new format, separate HDD/ATAPI Tests into different chapters
0.9	02/28/2006	Update version number of Drive Master 2006 Pro and SATA-IO IL Digital Scripts
1.0RC	03/02/2006	Approved by Logo Group
1.0	06/19/2006	Revision 1.0 Final

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REFERENCES

The following documents are referenced in this text:

- [1] Serial ATA Revision 2.5
- [2] Serial ATA Interoperability Program Unified Test Document Revision 1.0
- [3] Serial ATA Interoperability Program Policy Document Revision 1.0
- [4] LeCroy CATC Bus Analyzer Digital MOI Revision 1.0

Test Title: SATA-IO IL HDD tests

Purpose: Verify that HDD Device Under Test meets the Digital test requirements described in Serial ATA Interoperability Program Unified Test Document Revision 1.0

Resource Requirements:

1. Windows 2000, XP, or 2003 Operating System
2. 256MB RAM or higher
3. Motherboard with SATA Controller based on the Intel ICH7R chipset
4. Minimum 64 MB video card. 128MB is recommended.
5. At least 150MB free space for system drive
6. Bus Analyzer (or Scope)
7. ULINK Drive Master 2006 Pro w/USB key
8. ULINK Drive Master External Power Supply
9. Serial ATA cables
10. SATA HDD Device Under Test

****Optional:**

*One PCI to ATA or PCI to SATA (Depends on the system drive) add-on card
See details in Appendix B*

Hardware Equipment Model Number:

Intel ICH7R AHCI

See details in Appendix B

Software Revision Number:

ULINK Drive Master 2006 Pro: version 3.0.210

ULINK SATAIO-IL Digital Test Script: version 1.2

Last Modification: 03/02/2006

Test Setup:

1. Connect system drive to add-on controller or Parallel ATA port
2. Connect Device Under Test via Bus Analyzer or Scope to SATA port 0 on the motherboard using Serial ATA cables
3. Connect ULINK Drive Master External power supply to Parallel port or USB port
4. Connect Device Under Test to ULINK Drive Master External power supply using Serial ATA power adapter cable
5. Insert Drive Master 2006 Pro USB key into a USB port
6. Connect Bus Analyzer or Scope properly (see detail in corresponding equipment's MOI, e.g. LeCroy CATC Bus Analyzer Digital MOI Revision 1.0)

Test Procedure:

1. Start Drive Master 2006 Pro v3.0.210 by double-clicking "Drive Master 2006 Pro" icon on the desktop or by selecting from the Start Menu:
Start / All Programs / Drive Master 2006 Pro/ Drive Master 2006 Pro
2. Wait for "Drive Master 2006" window to pop up. Click "Yes" if the current selected HBA is the one you want to use for the testing, else click No and select the matching HBA from the list.
3. Under the 'File' menu in Drive Master 2006 Pro, click 'Open' to select the script. Select "SATAILMain_Selective.ens" or "SATAILMain_Full.ens" from the folder where the scripts are stored.
Note: It is recommended that you choose "SATAILMain_Selective.ens" to better customize your testing. See details in Appendix A.

4. Click Run button.
5. Enter Test ID number for Device Under Test, and click OK
6. Select Optional tests from the following message box and click OK.
 1. NCQ; 2. SSP; 3. IPM; 4. NCQ & SSP; 5. NCQ & IPM; 6. SSP & IPM; 0. All

It is recommended that you choose the default setting "0:All" to walk through all the test cases based on the features reported by the Device.
7. When you see the message box "Please start capture", configure and start recording from Bus Analyzer (or Scope) according to the corresponding equipment's MOI (e.g. LeCroy CATC Bus Analyzer Digital MOI Revision 1.0), then click OK
8. When you see the message box "Please stop capture", stop recording from Bus Analyzer (or Scope) and collect the necessary test results, then click OK.
9. Exit Drive Master 2006 Pro when tests are completed.

Test Results:

Test results can be retrieved from c:\SATAILTest\DGT according to the Test ID in log and csv format.

Measurement Tolerance: N/A

Only PASS/FAIL in Digital Test

Approximate Execution Time:

10~20 minutes

Possible Problems:

Test Title: SATA-IO IL ATAPI tests

Purpose: Verify that ATAPI Device Under Test meets the Digital test requirements described in Serial ATA Interoperability Program Unified Test Document Revision 1.0

Resource Requirements:

1. Windows 2000, XP, or 2003 Operating System
2. 256MB RAM or higher
3. Motherboard with SATA Controller based on the Intel ICH7R chipset
4. Minimum 64 MB video card. 128 MB is recommended.
5. At least 150MB free space for system drive
6. Bus Analyzer (or Scope)
7. ULINK Drive Master 2006 Pro w/USB key
8. ULINK Drive Master External Power Supply
9. ULINK SATA-IO IL TestCD 01
10. Serial ATA cables
11. SATA ATAPI Device Under Test

****Optional:**

*One PCI to ATA or PCI to SATA (Depends on the system drive) add-on card
See details in Appendix B*

Hardware Equipment Model Number:

Intel ICH7R AHCI

See details in Appendix B

Software Revision Number:

ULINK Drive Master 2006 Pro: version 3.0.210

ULINK SATAIO-IL Digital Test Script: version 1.2

Last Modification: 02/28/2006

Test Setup:

1. Connect system drive to add-on controller or Parallel ATA port
2. Connect Device Under Test via Bus Analyzer or Scope to SATA port 0 on the motherboard using Serial ATA cables
3. Connect ULINK Drive Master External power supply to Parallel port or USB port
4. Connect Device Under Test to ULINK Drive Master External power supply using Serial ATA power adapter cable
5. Insert Drive Master 2006 Pro USB key into a USB port
6. Connect Bus Analyzer or Scope properly (see detail in the corresponding equipment's MOI, e.g. LeCroy CATC Bus Analyzer Digital MOI Revision 1.0)

Test Procedure:

1. Start Drive Master 2006 Pro v3.0.210 by double-clicking "Drive Master 2006 Pro" icon on the desktop or by selecting from the Start Menu:
Start / All Programs / Drive Master 2006 Pro/ Drive Master 2006 Pro
2. Wait for "Drive Master 2006" window to pop up. Click "Yes" if the current selected HBA is the one you want to use for the testing, else click No and select the matching HBA from the list.
3. Under the 'File' menu in Drive Master 2006 Pro, click 'Open' to select the script. Select "SATAILMain_Selective.ens" or "SATAILMain_Full.ens" from the folder where the scripts are stored.

Note: It is recommended that you choose “SATAILMain_Selective.ens” to better customize your testing. See details in Appendix A.

4. Click Run button.
5. Enter Test ID number for Device Under Test, and click OK
6. Select Optional tests from the following message box and click OK.
1. NCQ; 2. SSP; 3. IPM; 4. NCQ & SSP; 5. NCQ & IPM; 6. SSP & IPM; 0. All

Note: It is recommended that you choose the default setting “0:All” to walk through all the test cases based on the features reported by the Device.

7. When you see the message box “Please insert ULINK SATA-IO IL TestCD 01”, insert the ULINK SATA-IO IL TestCD 01 and click OK.
8. When you see the message box “Please insert Blank CD Recordable disc”, insert a Blank Recordable/Rewritable CD and click OK.
9. When you see the message box “Please start capture”, configure and start recording from Bus Analyzer (or Scope) according to the corresponding equipment’s MOI (e.g. LeCroy CATC Bus Analyzer Digital MOI Revision 1.0), then click OK
10. When you see the message box “Please stop capture”, stop recording from Bus Analyzer (or Scope) and collect the necessary test results, then click OK.
11. Exit Drive Master 2006 Pro when tests are completed.

Test Results:

Test results can be retrieved from c:\SATAILTest\DGT according to the Test ID in log and csv format.

Measurement Tolerance: N/A

Only PASS/FAIL in Digital Test

Approximate Execution Time:

10~20 minutes

Possible Problems:

For CD Write, some ATAPI devices are sensitive to CD-Recordable/Rewritable Medium. This may cause the failure of CD Write test (GDR-03 DMA Protocol Support).

Appendix A: SCRIPTS

Scripts Dependency

ULINK SATA-IO IL Digital Test Scripts v1.2 can only be run on Drive Master 2006 Pro v3.0.210. If the version number does not have the exact match, the test will exit and an error message will be shown on the log window.

Scripts Selection

ULINK SATA-IO IL Digital Test Scripts are categorized into two groups: Mandatory tests and Optional tests.

Mandatory tests: GDR and ASR. If Device Under Test doesn't support ASR, test results can be ignored.

Optional tests: NCQ, IPM, and SSP.

SATAILMain_Selective.ens involves interactive response from the tester. It requires the tester to enter input into the pop-up message box each time to continue the testing.

SATAILMain_Full.ens will automatically select the default setting of message box in 30 seconds if there is no response from the tester. It will run all the Mandatory tests and Optional tests based on the features reported by the Device.

Appendix B: Additional Resources Details

PCI to ATA/SATA add-on controller card

If a Parallel ATA hard drive is used as system drive, connect system drive to the Parallel ATA port on the motherboard. If Parallel ATA port is not available, then use a PCI to ATA add-on controller card.

If a Serial ATA Hard Drive is used as system drive, connect system drive to a PCI to SATA add-on controller card.

ULINK SATA-IO IL TestCD 01

ULINK SATA-IO IL Test CD 01 is full-size Data CD constructed by SATA-IO COMP Data and Identification ID. It is only needed in ATAPI tests.

HBA Requirement

ULINK Drive Master 2006 Pro supports the following HBAs:

1. Intel ICH4 and above, including IDE, AHCI and RAID modes
2. All the HBAs complied with standard AHCI spec.
3. Silicon Image 3124, 3132
4. Marvell 6081

To minimize the impact to Device under Test from HBAs (such as the limitations or bugs related to the specific HBAs) and maximize the automation of Digital Tests, ICH7R AHCI is currently chosen for this set of tests.