
ULINK SATA Explorer 1.0

User Guide

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ULINK SATA Explorer

User Guide

ULINK SATA Explorer is a Hardware Test Fixture which is used to issue “Build-in Self Test” (BIST) Activate FIS to Host –typed Product under tests such as Host Controller and Port Multiplier’s Device port.

ULINK SATA Explorer is also used to verify the Host Digital test requirements described in Serial ATA Interoperability Program Unified Test Document.

In order to successfully test the designated product, a system with installed ULINK Drive Master will be needed.

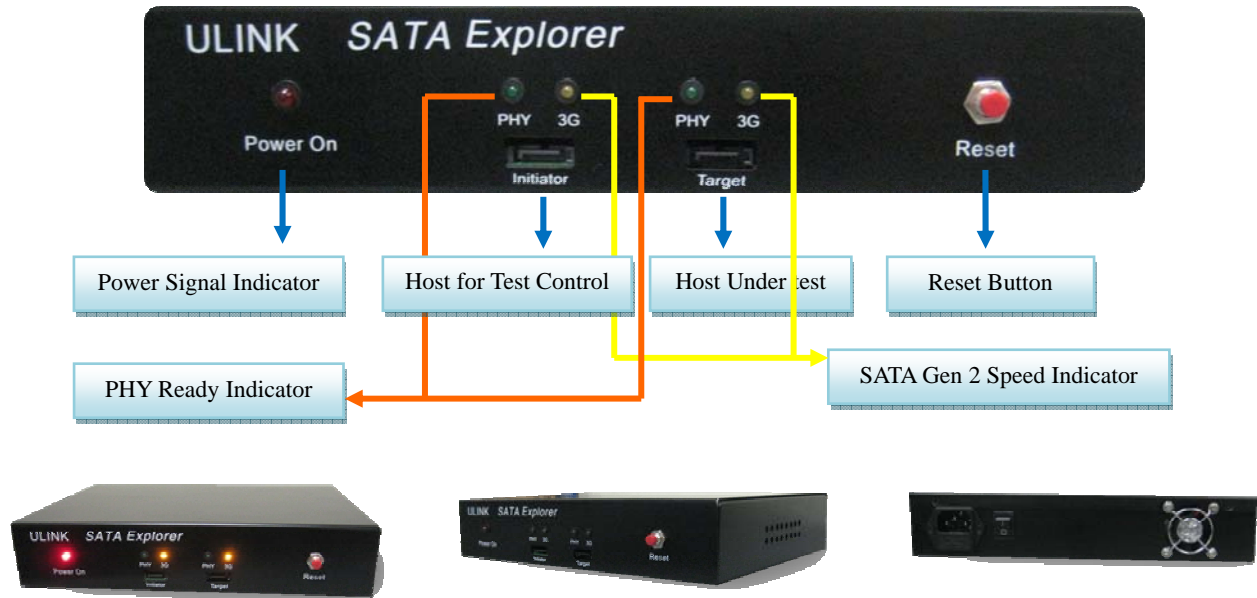
I. Resources Requirement

- SATA Explorer
- PC System as Host installed with ULINK Drive Master 2008 Pro
- ULINK Script



II. ULINK SATA Explorer

1. Specifications



2. Features

- ASR Control
- Speed Negotiation control
- Signal Loss/Recovery control
- IPM: PMREQ_P, PMREQ_S
- OOB: COMWAKE, COMINIT
- BIST T Mode with standard or user defined 2Dwords data pattern
- BIST L with internal data pattern

III. Operation Procedure on Host BIST Mode

1. Scripts:

\Host_JM		
	\Gen1_L	
		\ H_1.5G_L_HFTP.srt
		\...
	\Gen1_TAS	
		\H_1.5G_TAS_HFTP.srt
		\...
	\Gen2_L	
		\ H_3G_L_HFTP.srt
		\...
	\Gen2_TAS	
		\ H_3G_TAS_HFTP.srt
		\...
\PMDev_JM		
	\Gen1_L	
		\ H_1.5G_L_HFTP.srt
		\...
	\Gen1_TAS	
		\H_1.5G_TAS_HFTP.srt
		\...
	\Gen2_L	
		\ H_3G_L_HFTP.srt
		\...
	\Gen2_TAS	
		\ H_3G_TAS_HFTP.srt
		\...

a. Under main folder of this set of scripts, there are several subfolders:

- \Host_JM: Host in BIST mode by ULINK SATA Explorer
- \PMDev_JM: Port Multiplier's Device Port in BIST mode by ULINK SATA Explorer

b. Under each folder in item a, there are 4 subfolders:

- \Gen1_L: Gen1 w/BIST L
- \Gen1_TAS: Gen1 w/BIST T+A+S
- \Gen2_L: Gen2 w/BIST L
- \Gen2_TAS: Gen2 w/BIST T+A+S



c. Under each folder in item b, you will find the test script to be used:

Each test script has been coded with individual data patterns. User needs to select each script from here to start BIST with particular mode and data patterns.

d. BIST Modes have been coded:

Index	Description
0	Far End Transmit Only (T)
1	ALIGN Bypass (T+A)
2	Bypass Scrambling (T+S)
3	Primitive bit (T+P)
4	Bypass ALIGN and Scrambling (T+A+S)
5	Far End Retimed (L)
6	Far End Analog (F)
7	Vendor Unique (V)

e. Data Patterns have been coded:

Index	Description	Short name in filename
0	User Defined	----
1	Std. Low Frequency Test Pattern (LFTP):7E7E7E7E 7E7E7E7E	_LFTP
2	Std. Mid Frequency Test Pattern (MFTP):78787878 78787878	_MFTP
3	Std. High Frequency Test Pattern (HFTP):4A4A4A4A 4A4A4A4A	_HFTP
4	Std. Lone-Bit Pattern (LBP -ve):0C8B0C8B 0C8B0C8B	_LBP-
5	Std. Lone-Bit Pattern (LBP +ve):8B0C8B0C 8B0C8B0C	_LBP+
6	SATA Transmitter Jitter(SXJT-Chuck):F4EBF4EB 78064AF5	_SXJT
7	Low-Transition Density /w Hi-Freq Pat.(LTDHFP):7E7E7E7E 7E7E7E7E5	_LTDHFP
8	Lone-Bit Pattern(LBP80):8DFC91E3 916394E3	_LBP80
9	Simultaneous Switching Patterns(SSOP):7F7F7F7F 7F7F7F7F	_SSOP
10	Low Frequency Spectral Content(LFSCP):54F4ABAB ABEB5454	_LFSCP
11	Lone-Bit Pattern(-ve):91E392E3 94E391E3	_SLBP-
12	Lone-Bit Pattern(+ve):8BFC8DFC 8EFC8BFC	_SLBP+
13	Lone-Bit Pattern(ECN18):0C8B0C6B 0C8B0C6B	_LBPECN18

NOTE: Index 8 (LBP80) and Index 13 (LBPECN18) are LBP patterns with alternating disparity.

2. Configurations:

a. Host in BIST mode by ULINK SATA Explorer

- Connect Port 0 from System for Test Control (System TC) to Initiator Port of ULINK SATA Explorer
- Connect Target Port of ULINK SATA Explorer to the test port of Host Under Test (System HUT)



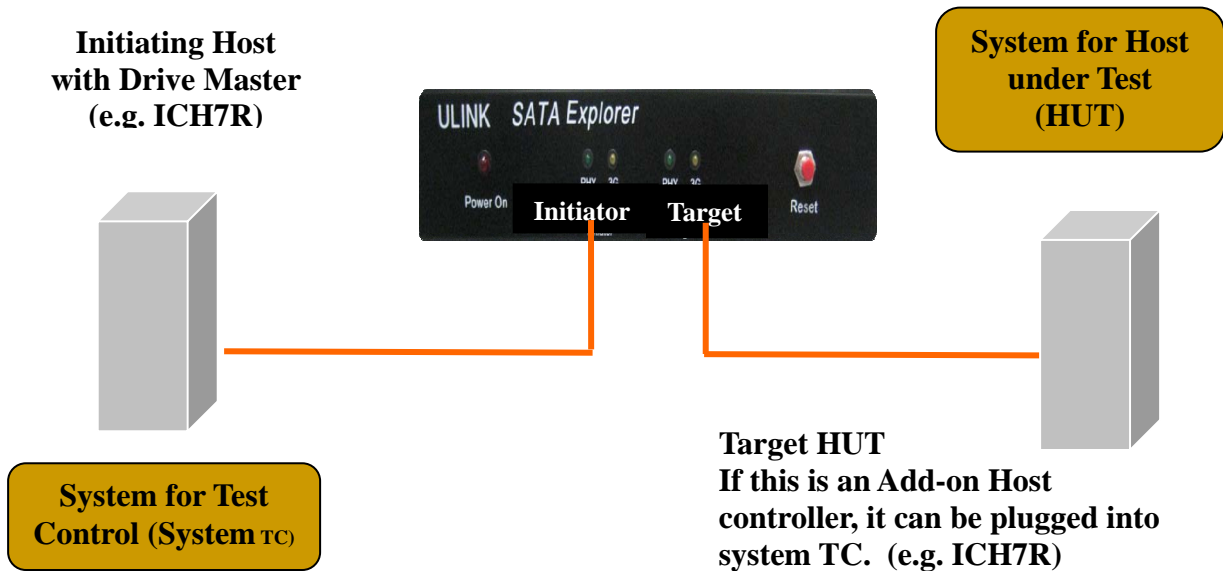


Figure 1: Host BIST Test Configuration

- In this test, Host under Test shall be separated from the Host controller which Drive Master runs against, i.e. this test doesn't support to put Port-Y in BIST mode from Port-X on the same Host controller.
- It is also necessary to avoid the impact from OS device driver. We recommend user only boot Host under Test into BIOS mode instead of go to OS with any OS device driver installed. If Host under Test runs with OS, we recommend users disable or uninstall the device driver for Host under Test.

b. Port Multiplier's Device Port in BIST mode by ULINK SATA Explorer

- Connect Port 0 from System for Test Control (System TC) to Host Port of Port Multiplier
- Connect Port x (other than Port 0) from System for Test Control (System TC) to "Initiator" Port of ULINK SATA Explorer
- Connect "Target" Port of ULINK SATA Explorer to the Device Port Z of Port Multiplier

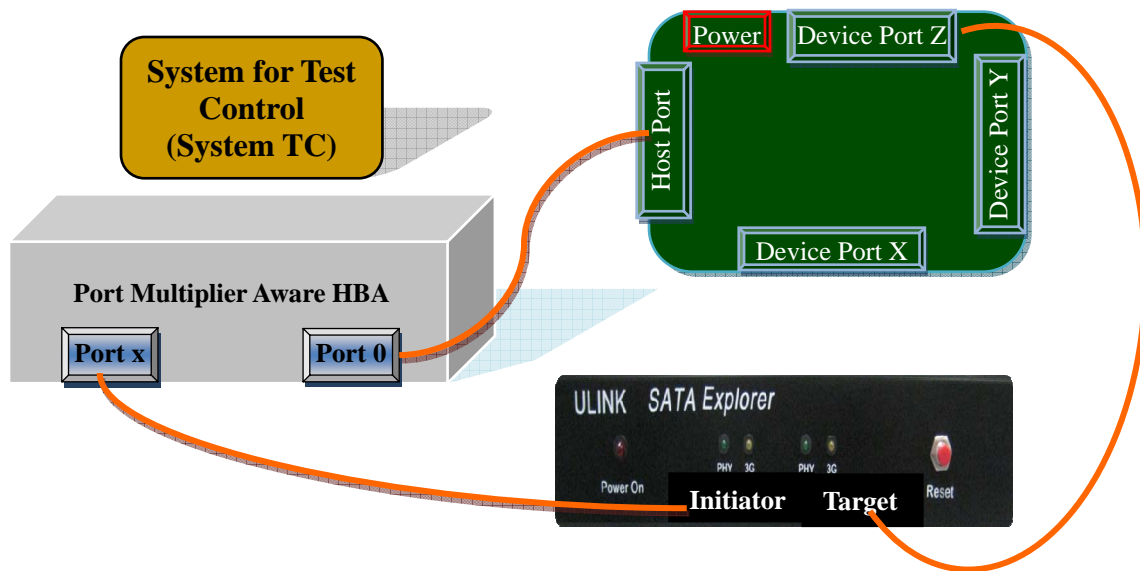


Figure 2: Multiplier's Device Port BIST Test Configuration

- The host which Drive Master runs against must support Port Multiplier.
- When user starts to run the test script, it is necessary to confirm the script is running on the Port x of System TC instead of Port 0, i.e. the current selected port in Drive Master is Port x.

c. Important Notes

- **Drive Master Version Requirement**
To correctly use ULINK SATA Explorer for Host BIST test, Drive Master 2008 version 4.0.360 or above will be needed.
- **RESET Button on ULINK SATA Explorer**
Before each BIST test, it is recommended that user clicks "Reset" button on ULINK SATA Explorer and waits until "Phy Ready" light is on. Especially when user runs BIST L test, it is supposed to click "Reset" button each time before next BIST L test.
- **Data pattern in BIST L**
For current version of ULINK SATA Explorer, the data pattern issued with BIST L is not the pattern coded with the test scripts. The data pattern is an internal data FIS, but it can behave as a kind of reference. For example, it can be used to check if Host under Test supports disconnection. For the coming version of ULINK SATA Explorer, the data pattern issued with BIST L will be the same as the pattern coded with the test scripts, i.e. it will be the data pattern as described in item E. Also ULINK SATA explorer will support COMP pattern issued with BIST L soon.

Appendix A

ULINK MOI for Host Digital Test (ASR, IPM)

SATA Explorer is used to verify that Host under Test (HUT) meets the Digital test requirements described in Serial ATA Interoperability Program Unified Test Document. The complete and update Method of Implementation (MOI) for Digital Test is published on the website of Serial ATA International Organization (SATA-IO).

For SATA IO member:

<http://www.serialata.org/membersonly.asp>

For Non-SATA IO member:

<http://www.serialata.org/interoperabilitydocumentation.asp>



Appendix B

Use Case: Put Gen2 Host in to BIST T+A+S mode with LFTP pattern

- a. Setup HW according to Figure 1 on Page 5
- b. Run Drive Master 2008 Pro if it is not started yet, select "File\Open"
- c. Go to "Host_JM" folder
- d. Select the subfolder "Gen2_TAS"
- e. Select the script "H_3G_TAS_LFTP.srt"
- f. Click "Run" on the toolbar
- g. If the script runs successfully, you will see error count is zero and the description on test that is done
- h. Now you can use scope and other related equipments for the measurement
- i. When you start next BIST test, please click "Reset" button on SATA Explorer and wait for "Phy Ready" light on.

