

Installation / User Guide R3.1

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Document History

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•	D2 0	G	Windows Driver "
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-		1 1 0011	Remove on-board SATA port and supported Highpoint Card.
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•	R3.1	Dec 09, 2014	Remove Windows Xp from Supported OS Add supported SAS/FCL PCI HBA card page.



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1.0 : HiTest Installation Guide

HiTest Installation Guide



<u>1.1 : Introduction</u>

HiTest is developed to support HGST HDD distributors or customers of distributors focused on customer Line Integration Reject or Field Reject Failure Diagnostics. This software can be given to distributors or their customers.

*Note

"Do not return to HGST" of disposition has two means. NFF: No Failure Found. There are no error records in a drive and Head Amp and Servo Measurement are Good. CID: Customer Induced Damage Failure (Handling Damage). RRO Measurement is criteria over and

Seems that Disk Shift was caused by handling damage.

(Rest of this page is intentionally left blank)



<u>1.2 : System Requirements - Hardware</u> <u>1.2.1 : Minimum Requirements</u>

Hardware / Software Pre-requisites for using HiTest for Corporate Level 1.0 Failure Analysis

Component	Minimum	Advise	Notes
Operating System	Windows 7 (32bit/64bit) Windows 8 (32bit/64bit) Windows 8.1 (32bit/64bit)		Not Support OS Windows 2000 Windows Xp 2003 Server 2008 Server
Processor	Pentium4 1.6 GHz	Generally higher the better. Very dependant on number of drives being tested	
Memory	1 GB	Generally higher the better.	
HDD	10GB	Minimal requirement	
Motherboard	1x IDE secondary master port for IDE test 1x PCI slot to install PATA, SATA, SCSI or FCL adaptor card 1x PCI-X slot to install SAS adaptor car	For testing multiple ATA drives the biggest req. is PCI slots. 4 or 5. This will probably dictate the spec of the board, higher PCI slots tend to be on higher spec boards	10x ports (5x PCI-IDE adaptor card) have been verified to work with HiTest.
Peripherals		CD-ROM or USB Memory, Bar code scanner (essential for high volume testing) capable of reading BC39 , BC128 and BC412	Bar code scanner will save a lot of time in logging drives that don't start. Barcode must be programmed to perform a carriage return after reading data.
Communication		USB (Memory Stick), Ethernet / Modem	USB could be used for loading such tools as DFT in the event that a floppy is too small or not available. Ethernet / Modem for updates through web or future implementations.
Graphics	800 x 600	1024 x 768 recommended, 64K colors	
PATA Test port on		Can utilize on-board secondary Mater	
mother board		port. (Cannot test on Primary port)	
SATA Test port on		The connection of SATA port on	
mother board		motherboard is not guaranteed due to	
		potential of unexpected interruption	
		from system BIOS or Operating	
		System.	



1.2.2 : Recommended

"HiTest" requires data entry for the drive Serial Number, Model ID and Customer Serial Numbers when the tested drive is DNR .(refer to 3.5) A barcode reader will increase the efficiency and accuracy of logging in such data. Following pages are the reference information for barcode readers and also adaptor cards and other suppliers that have been tested with HiTest.

(Rest of this page is intentionally left blank)



1.2.3 : Bar Code Reader Suppliers

There are many barcode readers available and below are just a few that we known to work. The only requirement is that it can read code types 39 and 128.

For Travelstar 40GN and 60GH only, one will require it to support code type 412.

Component	Supplier	Web site	
Metrologic		http://www.honeywellaidc.com/en-	
MS 5145 Eclipse		US/Pages/Product.aspx?category=Laser&cat=HSM&pid	
		=5145	
IDAutomation		\$99 on	
P'nP USB		http://www.idautomation.com/scanners/	
Barcode Reader	Opticon	http://www.opticonusa.com/usb.htm	
	OPT-6125-USB	Opticen	



1.2.4 : SATA Adapter Cards Supported

For Model HUS726060ALA640 or later

HighPoint	HighPoint
http://www.highpoint-tech.com/	Rocket RAID 2300 SATA controller
	Rocket RAID 2302 SATA controller
	Rocket RAID 2310 SATA controller
	Rocket RAID 2304 SATA controller
Rocket RAID 2300	Rocket RAID 2310
Sonnet	TEMPO SATA PRO EXPRESSCARD /34
http://www.sonnettech.com/	22 minute me

Up to HUS7240xxALx640 or HTS5410xxA7E630

HighPoint		HighPoint			
http://www.highpoint-tech.com/		Rocket RAID 1520 SATA controller			
		Rocket RAID 1540 SATA controller			
		Rocket RAID 1542 SATA controller			
		Rocket RAID	0 1640 SATA controller		
		Rocket RAID	0 1740 SATA controller		
		Rocket RAID	2300 SATA controller		
		Rocket RAID	2302 SATA controller		
		Rocket RAID	2310 SATA controller		
		Rocket RAID	2304 SATA controller		
		UDMA mode	e access is available with 1740	0/2300/2310 HBA only	
Rocket RAID 1540	Rocket RA	AID 1740	Rocket RAID 2300	Rocket RAID 2310	
			C C PUMP		
Sonnet		TEMPO SATA	PRO EXPRESSCARD /34		
http://www.sonnettech.com/		a p			



1.2.5 : SATA Controller Windows Driver Installation

<RocketRaid 1740/2300/2302/2310/2314>

In order to access the HDD, driver is not required when SATA HBA (RocketRaid 1740 /2300 /2302 /2310 /2314) are used.

In addition, HBA Driver might cause a problem to overwrite the data of the HDD automatically. Therefore, please never install HBA Driver in a PC for HiTest.

However we encountered new problem when we used the RocketRaid 1740 /2300 /2302 /2310 /2314 card. That is beep sound problem. To solve this problem, driver installation is required. After installed the drivers you have to install RAID Management Utility. After that Audible Alarm set to Disable.

p.s. Windows OS does not recognize this Raid adapter even if you install the drivers. So the problem which "HiTest terminated on the way" would not occur.



< Except for RocketRaid 1740/2300/2302/2310/2314>

When we run the HiTest for SATA drive, we encounter the below problem once in a while. HiTest terminated on the way when "Format" or "Extended Drive Self Test" is executed. This phenomenon occurred since Windows OS issues some command to SATA drive to recognize SATA card .HiTest does not need the drivers and Windows OS does not recognize SATA card if not install the drivers .So we recommend this operation.

p.s. We have not confirmed this problem with SAS and PATA cards.

During the first boot of the test system after installing new IDE PCI Controllers, Windows will declare "Found New Hardware Wizard" and offer the option to install a driver. But the HiTest do not need windows interface adaptor board drivers. So you need not install I/F adaptor board drivers.

f you see the following "Found New Hardware Wizard", please proceed as following process. At this stage click "Next>".





Please select the upper Radio Button "Search for a suitable driver for my device", then click "Next>".

Found New Hardware Wizard					
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.					
This wizard will complete the installation for this device: Mass Storage Controller					
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next. What do you want the wizard to do?					
Search for a suitable driver for my device (recommended) Display a list of the known drivers for this device so that I can choose a specific					
driver					
< <u>B</u> ack <u>N</u> ext > Cancel					

Please remove all check marks at "Optional search locations" as bellow, then click "Next>" button.



Please select the upper Radio Button "Disable the device. The Add/Remove Hardware Wizard in the control



Panel can be used to complete the driver installation". Then click "Finish" button.

Found New Hardware Wizard		
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.		
Mass Storage Controller Windows was unable to locate a driver for this device. To search another location click		
Back, or select an option and click Finish.		
installation.		
< <u>B</u> ack [Finish] Cancel		

After that, Windows will not open "Found New Hardware Wizard" after next boot.

If you want to uninstall PCI HBA driver. Please refer to Next Page..



Check Device Manager

If driver of the PCI HBA was installed, DeviceManager shows the HBA name without exclamation mark. We expect HDD controller has exclamation mark.

Please right click and select Properties to show the device property



And Select Driver tab and Uninstall the device driver. Windows show dialog box to encourage system reboot when you uninstall device driver. Please click "No" to cancel Windows reboot.

RocketRAID 174x SATA Controller Properties 🛛 🛛 🛛				
General Driver Details Resources				
RocketRAID 174x SATA Controller				
Driver Provider: HighPoint				
Driver Date: 2/1/2007				
Driver Version: 1.0.2.201				
Digital Signer: Not digitally signed				
Driver Details To view details about the driver files.				
Update Driver To update the driver for this device.				
<u>Boll Back Driver</u> If the device fails after updating the driver, roll back to the previously installed driver.				
Uninstall To uninstall the driver (Advanced).				
OK Cancel				



Please go to installed drivers directory to delete registered device driver. Default setting of the directory is C:\\Winodow\system32\drivers (Case of Windows Xp 32 bit). This sample case deletes Highpoint Rocket RAID 1740 driver.



Then please reboot Windows system and recheck DeviceManger to check target device has exclamation mark. If Driver deleting was succeed, the device icon has exclamation mark.

Appendix

HBA Name	Driver Name
Rocket RAID 2300	2300_00.sys
Rocket RAID 2310	2300_00.sys



1.2.6 : SAS/FCL PCI Express HBA Card

HiTest supported SAS/FCL PCI Express HBA for HGST SAS/FCI HDD products

For SAS Interface

LSI Logic	Card Name	Required PCI Bus
http://www.lsilogic.com	LSI SAS3041E-R	x4 lane PCI Express 2.0
	LSI SAS 9211-4i	
	LSI SAS 9200-8e	X8 lane PCI Express 2.0
Sonnet	TEMPO SAS PRO EXPRESSCARD /34	ExpressCard /34
http://www.sonnettech.com/	TEMI O SI STRO EM RESSENTED / 54	Lapiesseard / 54

LSI SAS3041E-R	LSI SAS 9211-4i	LSI SAS 9200-8e	TEMPO SAS PRO EXPRESSCARD /34
			Sas/sata HOST CONTROL

For FCL Interface

LSI Logic	Card Name	Required PCI Bus
http://www.qlogic.com	Qlogic QLE2460	x4 lane PCI Express 2.0

Qlogic QLE2460		
D		

HiTest requires to use HBA driver for SAS/FCL products. Please download the SAS/FCL HBA driver from HBA Vendor Home page.

SAS/FCL don't need to set up port configuration which is described in the section 2.1.2.



<u>1.3 : System Requirements - Software</u> <u>1.3.1 : Microsoft .NET Framework Redistributable Package version 2.0</u>

From HiTest Version 2.00, .NET Framework 2.0 is required on Windows Xp If operation system of HiTest installed machine is Windows 7, please skip this part. In case of operation system is Windows 8 or Windows 8.1, please go to next page.

This package must be installed prior to the installation of HiTest. The install package is available from your technical support representative or the following URL.

 $\underline{http://www.microsoft.com/downloads/details.aspx?displaylang=en\&FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5}$



Would you like to open the file or save it to your computer?

Open Save Cancel More Info

Start the installation by clicking "Download". Run directly from the web by selecting or to your hard drive for installation later.

Follow the on screen instructions for installation until complete.



Important * HiTest does not work with .NET framework 4.5 which is installed by Windows8 & Windows 8.1 default installation. Please install .NET framework 3.5.

If test PC cannot use Internet, please Install ".Net" from Windows 8/8.1 install CD/DVD.

Open command prompt as administrator. And run command line as below. dism.exe /online /enable-feature /featurename:NetFX3 /All /Source:D:\sources\sxs /limitaccess D:\ is optical drive letter. It will be changed by machine configuration

See also

http://msdn.microsoft.com/en-us/library/hh506443



1.3.2 : HiTest Installation

The latest releases of HiTest install package can be obtained from your local technical support representative of the HGST.

Double Click the "Setup.exe" file and follow the on screen instructions until installation is complete.

You have now installed the HiTest application on your system.

You should see the following shortcut in your Windows Programs listing;



And the following shortcut icon on your desktop;



Caution when you want to install HiTest on Windows7 and Windows 8

HiTest can be run on Windows7 when you installed HiTest program to "C:\HiTest " folder. If you install to the default "C:\Program Folder\HiTest " folder, unexpected problem may occur.





2.0. : HiTest User Guide

HiTest User Guide



2.1 : First Time Setup 2.1.1 : Launch HiTest



Double click the **HTest** icon on your desk top. Log-in information is required here that will be used in the summary data and must be entered accurately if report generation is to be accurate and efficient.

For the first time user, the PCI Check screen will appear. Please refer to the relevant sections for further advice.



2.1.2 : IDE PCI Card - Port Setup

HiTest supports up to 10 port addresses through which it can test a drive. These will include any detected controllers resident in the host PC (on the motherboard) as well as added PCI controllers, for PATA and SATA. With some modern systems there can be to sets of PATA as well as SATA controllers on-board which can consume most of the available ports, thus, when one adds PCI controllers they may not be visible on the HiTest screen.

In this event one can re-order the port assignments in the PCI Card setup window as described below;

From the main HiTest window select the Config drop down menu ad choose the PCI Card (P) option.

Config Option Utility	About	
PCI Card (P)		
User Information		
Exit	Abort ALL	HiUtil
Port	Model	S/N

The ports defined in the PCI Card Information (0 to 9) equate to the Ports defined in the HiTest main window (1 to 10)

🗏 PC	IChk	Form							
ATA	PCI (Card Inf	ormation SERVER ASPI Card	Information					
		^							
		Fortho	Description	Slot	1/0 (1)		1/0 (2)		Current Serial
•	Ŧ	NA	MotherBoad	Primary	000001F0	000001F7	000003F6	000003F6	
	Ŧ	NA	MotherBoad	Secondary	00000170	00000177	00000376	00000376	
	Ŧ	NA	Intel Corporation 🛛 🐰	HiTest (V	ersion: 2.10	DS)	000	00000000	
	Ð	NA	Intel Corporation	onfia Option	HotKev A	bout	500	0000E603	
	Ð	NA	Intel Corporation		Distanti I		300	0000E803	
	Ð	NA	Intel Corporation	₽q				00000000	
	Ð	2	HighPoint Technologies Inc	Scan Drive	Start ALL /	Abort ALL	TestOpti 100	0000D103	
	Ð	1	HighPoint Technologies Inc	ATA PO	t Mod	lel		0000D303	
	Ð	3	HighPoint Technologies Inc	START 1	HUA72101	UKLA330	GTA GER ⁶⁰⁰	0000D603	
	Ð	NA	HighPoint Technologies Inc	START 3	HDS72252	25VLSA80	VNR. ⁸⁰⁰	0000D803	
	Ð	5	HighPoint Technologies Inc	RTART 4	HD872253	25VLSA80	VNR _J 00	00000000	
	Ð	4	HighPoint Technologies Inc	START 5	HDP72502	25GLA380	GEK)00	00000000	
	Đ	7	HighPoint Technologies Inc	START 6	HTS54256	OK9SA00	BB0	00000000	
	Ŧ	6	HighPoint Technologies Inc	START 8	HTS54168	IONSSAUU	SB2	00000000	
	Ŧ	9	Promise Technology	START 9	HTS54251	6K9A300	BB0;000	00000000	
	Ŧ	8	Promise Technology	START 10	HTS54102	0G9SA00	MPB)00	00000000	
	Ŧ	10	Promise Technology)00	00000000	
	Ŧ	NA	Promise Technology	anuaro seque	nce	1010111	0000000000	00000000	
*									



If you want to modify the Port Number assignment, click the PortNo column and select the number from drop

down list and Save & Close

When you select the number which is already assigned, warning message is displayed.

	-			-	mer corporation	rindiy
	Ŧ		2		HighPoint Technologies Inc.	Primary
Þ	Ŧ	1		•	HighPoint Technologies Inc.	Secondary
	Ŧ	1		^	HighPoint Technologies Inc.	Primary
	Ŧ	3			HighPoint Technologies Inc.	Secondary
	Ŧ	4		≡	HighPoint Technologies Inc.	Primary
	Ŧ	6			HighPoint Technologies Inc.	Secondary
	Ŧ	8		~	HighPoint Technologies Inc.	Thirdly
	Ŧ		6		HighPoint Technologies Inc.	Fourthly

Device scan function is added.

When "Scan Device" button is clicked, connected drives are scanned and serial number is displayed. It is help for the Port No. setting. The port which Port No is assigned to "NA", scan is not performed.

Đ	NA	Intel Corporation	Thirdly	0000E 900	0000E90F	00000000	00000000	\sim
Đ	2	HighPoint Technologies Inc.	Primary	0000D000	0000D007	0000D100	0000D103	GER 330RCA007PN
Ŧ	1	HighPoint Technologies Inc.	Secondary	0000D200	0000D207	0000D300	0000D303	GTA100PAG03PPA
Đ	3	HighPoint Technologies Inc.	Primary	0000D500	0000D507	0000D600	0000D603	NRJMHC6DA2AWM
Ð	NA	HighPoint Technologies Inc.	Secondary	0000D700	0000D707	0000D800	0000D803	
Ð	5	HighPoint Technologies Inc.	Primary	F9022100	F90FFFFF	00000000	00000000	GEK230RBA01X3A
Ð	4	HighPoint Technologies Inc.	Secondary	F9024100	F90FFFFF	00000000	00000000	VNRJMHC6DB5LHM
Ŧ	7	HighPoint Technologies Inc.	Thirdly	F9026100	F90FFFFF	00000000	00000000	DP0B00DQA012WA
Ŧ	6	HighPoint Technologies Inc.	Fourthly	F9028100	F90FFFFF	00000000	00000000	BB0100WAA00NVB
Ŧ	9	Promise Technology	Primary	F9180200	F919FFFF	00000000	00000000	BB0300WCA00P6A
Ŧ	8	Promise Technology	Secondary	F9180280	F919FFFF	00000000	00000000	B2201SGKNEERL
Ŧ	10	Promise Technology	Thirdly	F9180300	F919FFFF	00000000	00000000	MRBAF0X1G09MPF
• 🗄	NA	Promise Technology	Fourthly	F9180380	F919FFFF	00000000	00000000	
*								\smile
							. 1	
			SCAN PCI C	ard Sa	ve & Close	Cano	cel	ScanD



2.1.3 : User Login

During the launch of HiTest / Login one will be asked to enter various data about the User and their Location. HiTest is an integral part of the Failure Analysis process. It's main purpose is to test Hard Disk Drives to a common routine and to record those details for pareto analysis. For those purposes to be meaningful it is essential that the information be entered consistently and accurately.

The User Login information allows the individual drive test data to be linked to a particular Customer / User. The details one enters must be consistent for all tests performed for that user.



User Name	Full name of the person testing these drives.
	If the user changes during a day without a reboot, one must re-enter the user name
	in the User Information through the HiTest drop down menus.
Customer Name	This should be the name of the company where this installation of HiTest s being
	run. It must be kept consistent for all instances of this company across all
	geographies.
Customer Factory or ODM	This is a name or acronym used to define this site location within the company
	defined in the "Customer name" field. This must be kept consistent for all entries
	made at this location.
Customer City	The City where this location is situated.
Customer Country	The country where this location is situated.
Failed At	Segment - where drive failed. (ie. Line=Line integration)
Tester Name	Tester No.1, PC1, etc

Note:

The fields are designed for alpha-numeric characters. Please refrain from using any other characters such as ",", "." and "-"



2.1.4 : User Login Requirements for GENERIC Customer

Before one tests any products, it is essential for HiTest to gather information about the user and location that the tests are to be conducted. These details will be sorted in the results files for each drive tested.

The following details will help your Customer Support representative, and subsequently the HGST FA Labs, to understand where the drive has failed and returned from. It will help to understand if there are certain trends in returns;

For example, Customer A has 2 PC's running and PC1 is exhibiting more DNR (Drive Not Ready) errors than PC2. This could indicate hardware issues with that system and not real drive failures.

Or Customer B has multiple locations and one location is showing a significantly higher failure rate than the other locations. This could indicate a unique problem at that location or a specific system or environment that the drive is being used in, and not real drive failures.

All of this will help to isolate any issues quickly and improve overall quality.

User Name	Full name of the person testing these drives.
	If the user changes during a day without a reboot, one must re-enter the user name
	in the User Information through the HiTest drop down menus.
Customer Name	This should be the name of the company where this installation of HiTest s being
	run. It must be kept consistent for all instances of this company across all
	geographies.
Customer Factory or ODM	This is a name or acronym used to define this site location within the company
	defined in the "Customer name" field. This must be kept consistent for all entries
	made at this location.
Customer City	The City where this location is situated.
Customer Country	The country where this location is situated.
Failed At	Segment - where drive failed. (ie. Line=Line integration)
Tester Name	Tester No.1, PC1, etc



2.2 : Ready to Start

Once the User Login completed, the main HiTest screen will appear and you can start testing drives.

NOTE: Please check that the Date and Time are reported correctly. If not, please correct in the system settings before continuing.

🕌 HiTes	st (V	ersion:1.64) Standar	d						\mathbf{X}
Config (Optior	n About							
Scan Dri		Start ALL Abort ALL	TestOption	N N					
ATA	Port	Model	S/N	F/W	Capacity	Status	Result	Item & Result	%
	1								
	2								
	3								
	4								
	5								
	6						Date &	& Time	
	7								
	8							\	
	9								
	10								
•									•
Standard S	iequer	nce						2005/09/26	19:18



3.0: Start Testing 3.1: HiTest Test Option Selection

HiTest's prime function is to perform level 1.0 Failure Analysis. This involves collecting parametric data from the drive in order to assess if the drive is fundamentally good or defective.

Drives that are NFF (No Failure Found) are parametrically good, however in order to be confident that the drive can be returned to a user environment one must test the entire user area.

The following describes the process for setting the test routine to include a Read Verify to all sectors of the drive for all drives that have passed the standard sequence as NFF.

🔡 HiTes	t (Ve	rsion:1.63) Standard							
Config C	ption	About							
Scan Dri		Start ALL Abort ALL	estOption						
ATA	Port	Model	S/N	FAV	Capacity	Status	Result	Item & Result	%
	1							Std. Seq	
	2							Std. Seq	
	3							Std. Seq	
	4							Std. Seq	
	5							Std. Seq	
	6							Std. Seq	
	7							Std. Seq	
	8							Std. Seq	
	9							Std. Seq	
	10							Std. Seq	
Standard S	equen	ice						9/6/2005 6	38 PM



Click Test Option button TestOption, then following screen will open.



🔜 Set Test Condition

Select Test Sequence Standard Sequence (STD SEQ) STD SEQ + Sequential Read STD SEQ + Sequential Write + Read STD SEQ + Sequential Read + Write STD SEQ + MBR Erase Firmware Update STD SEQ + WRITE ABORT DETECTION	Test Options	Test Mode
Please click the "Scan Drive" button again after you click the "Apply" button.		
Apply		

Basically, Optional sequence can be run only after the Standard Sequence (STD SEQ).

Even if you choose the "STD SEQ + WRITE ABORT DETECTION", the Standard Sequence will be executed before write abort detection step.

As an exception, only "Firmware Update" is performed without the Standard Sequence.

"STD SEQ + Sequential xxx" options are performed only when the result of STD SEQ is NFF-XXX. " STD SEQ + WRITE ABORT DETECTION" option is performed only when the result of STD SEQ is RHE=1. *Note

About "Firmware Update" and "WRITE ABORT DETECTION" option explains in chapter 4 more detail.



Please choose the optional sequence from the list shown here.

The following sample screen shows when the Sequential Read is selected. The option will be run after test sequence.

STD SEQ + WRITE AB	ORT DETECTION		~
		_	

.

Click Apply button

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3.2 : Testing a Drive

Once the drive has been "logged in". One can attach it to the bus and run HiTest.

Attach the drive as a Master drive to an approved Controller port. One can attach multiple drives and test multiple drives at the same time. Once all drives to be tested are attached, apply power.

Allow some time for the drives to spin up and make them known on the bus, then, on the HiTest screen, click



the Scan Drive button.

A successful scan of all attached drives will result in a screen like this;

HiTes	it (Ver	sion:1.41) Expert								×
Config	Option	Utility About								1
Scan D	a rive	Start ALL Abort ALL	SetOption							
	Port	Model	S/N	FAV	Capacity	Status	Result	Item & Result	%	
_	1					7 F		Full Test		
	2				1. 17	01		Full Test		
START	3	HTS726060M9AT00	MRH403M4GDVHGB	MH4OA68A	60GB	50	DNR	Full Test		
START	4	HTS726060M9AT00	MRH403M4GE79LB	MH4OA68A	60GB	50	DNR	Full Test		
	5					00		Full Test		
START	6	HTS726060M9AT00	MRH403M4GBS24B	MH4OA68A	60GB	50		Full Test		
START	7	HTS726060M9AT00	MRH403M4GE688B	MH4OA68A	60GB	50		Full Test		
1	8					00		Full Test		
	9					N/A	*	Full Test		
	10					NI/A		Full Test		
									<u> </u>	
Standard	Full Tes	t Mode						02/08/2	2004 14	:26

All rows turning YELLOW, indicating a successful scan and awaiting test start.

If the Result field holds a "DNR", please push this button once again.

If the drive is a true DNR then the HiTest program will eventually classify it as such and present the row as follows;

3	HTS548020M9AT00	MRL122L1GBN4GB	MG1OA53A	20GB	50	DNR	Full Test	
					59	DNR	Full Test	
 5					00		Full Test	
6	HTS548020M9AT00	MRL121L1G5KKRB	MG1OA53A	20GB	50	DNR	Full Test	
7					59	DNR	Full Test	

Turning the DNR drives rows PINK indicates a true DNR, please execute DNR login process (refer to 3.5).

Once you have established the number of drives you wish to test and all show a YELLOW row after scanning

the bus, one can start the test by clicking the Start ALL button on the main HiTest screen.



3.3 : During HiTest

A new window will appear indicating the test steps and their progress. The rows will also turn PALE BLUE to indicate they are running.

1.	est (Rev Option	rison:1.00) About						_		
	: eck	Scan Drive	Abort ALL Load	I Script	t Script					6
	Port	Model	S/N	F/W	Capacity	Status	Result	Item & Result	%	-
	1	ATAPI Device				FF		Full Test		1
	2	HTS548080M9AT00	MRL400L4A01GAA	MG4OA4J7	80GB	50	Step:3	SMART Attri.	100	N.
	3			1000.1001	10100	01	D 1 1	Full Test		2.
 	4	HDS722512VLSA80	VNRC3AC3CU/TKD	V33OA60A	124GB 400GB	50	Step:4	SMART ErrLog	2.7	1
		HD3724040KL3M00	KRESUTRAGUEAAA	KE MÜMZÜK	400GB		Step.4	SMART ErrLog	2.1	
	📙 Prog	ress						Full Test		믜ㅗ
	Port Drive		Step		Progress					
	1									
	2	HTS548080M9AT00 MRL400L4A01GAA	3/11		SMAF	RT Read	ATTRI	Full Test		4
Standa	d F ull3 es	Mode							4	
\mathcal{D}_{+}	4	HDS722512VLSA80 VNRC3AC3C07TKD	4/11	11	SMAI	RT Read	Errlog	$q_{1} = q_{1}$		
	5	HDS724040KLSA80 KRFS01RAG0EXAA	4/11		SMAI	RT Read	Errlog			8
	6									
	7			17		1		4. 4		
	8									



3.4 : Result of HiTest

3.4.1 : HiTest Result and Color Code Summary

After a test is completed, a result can be judged by the color of a line as shown in the following figures.

	3	HTS548060M9AT00	MRLB22L4GJ6V5C	MGBOA53A	60GB	50	HDD512	Drive Fail	100
	- 4	HTS548060M9AT00	MRLB21L4G9PD2C	MGBOA53A	60GB	50	HDD512	Drive Fail	100
1	5					00		Full Test	
	6	HTS548060M9AT00	MRLB22L4GR3TBC	MGBOA53A	60GB	50	HDD512	Drive Fail	100
	- 7 -	HTS548060M9AT00	MRLB22L4GNU86C	MGBOA53A	60GB	50	NFF000	NFF	100

	3	HTS548020M9AT00	MRL122L1GBN4GB	MG10A53A	20GB	50	NFF000	NFF	100
	-4					59	DNR	Full Test	100
1	5					00		Full Test	
	6	HTS548020M9AT00	MRL121L1G5KKRB	MG1OA53A	20GB	50	NFF000	NFF	100
	7					59	DNR	Full Test	100

The meaning of each color is as follows.

Gray	: Default field color
Yellow	: Ready to Start HiTest
Pink	: DNR (Drive Not Ready)
Pale Blue	: Drive running
Blue	: Drive Passed HiTest
Red	: Drive Failed HiTest
Purple	: Customer Induced Damage Failure (Handling Damage)
Orange	: No Drive Login Data
Green	: Normal End of "Drive Repaired" or "FW update successfully"



3.5 : Drives Not Ready (DNR) Result Entry

If the drive(s) fail to initialize for what ever reason on HiTest, it is classified as a DNR (Drive Not Recognized) and will be highlighted "pink", as the two in the capture below show;

Contractor and the Martin									(
	3	HTS548020M9AT00	MRL122L1GBN4GB	MG1OA53A	20GB	50	DNR	Full Test	
	4					59	DNR	Full Test	
	5					00		Full Test	
	6	HTS548020M9AT00	MRL121L1G5KKRB	MG1OA53A	20GB	50	DNR	Full Test	
	7					59	DNR	Full Test	

In this event, please execute DNR login process as follows;

Select the ______ button from the Login main screen.

🖶 Login 🔳 🗖 🔀								
(L) Login (O) Option								
Login for HiTest								
Login								
[]								
DNR Login								
Exit								



O and all as all the base of tabala and the second	¬ ,							
Scan all available barcode labels or key-in		Select the most appropriate result that						
the HDD serial number] [matchs the condition of this drive.						
		/						
🔜 DNR ogin 1.47S								
Sommer	Drive Not Ready Status							
entry								
	02 HDD-OTHER IDENTIFY/INQUIRY EF	ROR						
Label Information	03 HDD-OTHER HITEST HANG							
	04 HDD-OTHER HITEST ABORTED BY	OPERATOR						
	05 HDD-DNR-NO SPIN/ACTUATOR EX	CITATION SOUND						
	106 HDD-DNR-NO SPIN/NO SOUND							
	09 HDD-DNR-SPINS WITH ACTUATOR KNOCKING SOUND							
Serial Number	10 HDD-DNR-SPINS WITH SCRATCHING SOUND AFTER HEAD LOAD							
	11 HDD-DNR-SPINS/HEAD LOADING	30UNDS OK						
	12 HDD-DNR-OTHER							
	MM DD							
	Mfa Date	▼ 2006 ▼						
Login Ewerbdonnen (
Login Error Message .								
	Cancel	Save						
	Date of dr	ive laber[li avaliable]						

Note. Use the "Scanner entry" field box for entering information. HiTest will automatically understand what is being entered and act accordingly.

(1) Wand in the Serial Number barcode from the HDD label. * Mandatory required

(2) Select the DNR Status.

(3) Enter the Mfg Date, obtained from the HDD Label. (Optional: if available)

(4) Save the data by clicking on the Save button.

Note. If the Drive Serial Number is missing or a carriage return has not been used after inputting the text, the following message will pop-up.

Login	1.475
⚠	Please input Serial Number
	COK



3.6 : HiTest Results in the HiTest\Log Folder

When HiTest completes testing a drive it will create all the relevant output files and store them in the main HiTest log folder or one of it's sub-folders as seen below;

The default folder in which HiTest is installed : C:\Program FilesHiTest

- The folder of the log files for tester : (Hi
- The folder of the log files for each drives
- : (HiTest folder)\log\
 - : (HiTest folder)\log\(Model Name)\





HiTest Standard Log (Sample)

Individual Log



Summary Log





3.7 : Logs to check the Test Results

There are 2 type of log in the text format.

[1] Test Summary Log --- file name: yyyymmdd_TesterName.log

This log shows test result summary for one day. Please check the Disposition column for Return to HGST or Do not return to HGST.

(Sar	nple ima	age)										
-	HiTest ((- Hitachi HDD C) 2004-2007 Hi	Diagnostic Test tachi Global St 	orage	Technologies		 +					
- -		Test	Summary Log				+ +					
Custo	omer	Location	Model		Serial No	F	W Rev.	P/N	MFG Date	HiTest Ver.	Start Date	Start Time
HITA	:HI	STR	HDT722525D	LAT80	VD041BT4CLLV	'1E V	440A70A	0A30243	09/29/2005	2.00S+1.60S	3/1/2007	16:43:7
_	End Time	Disposition		Error	Description				Customer E	Error Description		
	16:44:49	RETURN TO HIT	ACHI GST	DETEC	TED PROBLEM						-	

[2] Drive Test Log --- file name: DriveSerialNumber.log

This log shows individual drive test result.

You can find the drive information at the beginning of this log and disposition at the end of the log.



(G	• •	>
(Samn	0 1mg	$(\alpha \alpha)$
(Samp)		201
(~~ ·····P		

+ HiTest - Hitachi HDD Diagnostic Test Ver.2.10S-05((C) 2004-2008 Hitachi Global Storage Tec	(Login 1.74S)	
DRIVE INFORMATION	+ 	
Serial Number : WAA00NVB MFG ID : BB0100 Model : Hitachi HTS542560K9SA00 Part Number : MFG Date : Firmware Rev. : BB10C32P Current Max.LBA : 117231407 = 60GB (1GB = 1 Power-Un Hours : 78.9 hours 7(3 days 7 6 Test Date : 09/09/2008 14:06:41	,000,000,000 Byte) hours / 55 min / 8 sec)	
CUSTOMER INFORMATION	+ +	
[5] SMART SelfTest Log	Started : 09/09/2008 14:07:39	
NO. TST STS Time Stamp CHK LBA Olh OOh 1 hr OOh Oh ***Short Self Test, Off-Line mode Test completed without Error Olh OOh 1 hr OOh Oh O2 ***Short Self Test, Off-Line mode Test completed without Error		
#### 01h 00h 49 hr 00h 0h #03# ***Short Self Test, Off-Line mode #### Test completed without Error		
[6] Servo Check [7] Defect Map Check	Started : 09/09/2008 14:07:44 Started : 09/09/2008 14:07:57	
DISPOSITION		

ALL TESTS PASSED SUCCESSFULLY		



3.8 : Logs for HGST representative for further Analysis

There are 2 types of logs which are not in the text format.

[1] Test Summary Log --- file name: yyyymmdd_TesterName.blb



[2] Drive Test Log --- file name: DriveSerialNumber.blb

93a

Sample : Q2COBDWA.blb

These files are created for HGST Failure Analysis Engineer use only. Please pass those files for your HGST representative.



4.0: HiTest option sequence Guide

4.1: Firmware Update

[1] For Multiple Drive

This method has been supported from HiTest Version 1.69.

1. Please select the optional sequence, "Firmware Update".

This optional sequence is supporting firmware update for multiple drives (both desktop and mobile products) and this is installed automatically (both Expert Version and Standard Version)

E Set Test Condition	<u> </u>
Select Test Sequence Standard Sequence (STD SEQ) STD Sto + Sequential Read STD Sto + Sequential Read-Write-Read STD Sto + Sequential Read-Write-Read STD Sto + Sequential Read + Format Please Click the "Scan Drive" button again after you click the "Apply" button.	Test Mode
Apply Cancel	111

2. Please click the "Scan Drive" button.

When "Firmware Update" option is selected, Drive Login is not required even if Expert version.

3. Please click the "Test Start" Button

4. Please select the firmware file of the revision which you are going to update since file selection window is displayed.

5. HiTest updates only the drive which matched the selected file.



Note : Please ignore the DISPOSITION in the text log, although it is displayed as "RETURN TO HGST" when firmware update is not performed.

[2] For Single Drive

Please double click around the S/N (shown below) to get into the command utility to download the microcode.

🏭 HiTe	est (Ver	sion:2.00S)						_1	
Config	Optic	on HotKey About							
Scan	Drive	Start ALL Abort ALL	TestOption						
ATA	Por	t, Model	S/N	F/₩	Capacity	Status	Result	Item & Result	%
STAR	T 1	HDS721616PLA380	PVB300Z2R00A7D	P220A70A	165GB	50		Std. Seq	
	2					N/A		Std. Seq	
	3					N/A		Std. Seq	
	- 4					N/A		Std. Seq	
	5		Double Click			N/A		Std. Seq	
	6					N/A		Std. Seq	
	- 7					N/A		Std. Seq	
	8					N/A		Std. Seq	
	9					N/A		Std. Seq	
	10					N/A		Std. Seq	
Standar	d Seque	ence						2007/03/13	16:33



Please click the Open button Open in order to select the target firmware file.

E C	ommano	d Utility	
File	Edit	View	
			Port Information Port No: 1 Address(1) 170 Address(2) 376 Drive Information Model Name & S/N Hitachi HDS721616PLA: PVB300Z2R00A7D F/W : P220A70A Max. LBA 488 488 Max. LBA 488 488 184 321672959 Security Status Port 0 Status Alt Stat
F F L	Firmwar Path List	re Update Open Start Update CapacityClip(DEC) SetMaxLBA Clip	

Folder Select Dialog will be shown. Please click the folder which is including the Firmware File.

OK Please click the OK button



Please select the firmware you would download from the ListBox.

Firmware Update				
Path	D:\Data\Microcode\Pathf	nder-	II\B3A	Open
List	_		Start U	Jpdate
	P200AB3A.BD		,	
Tools	P209AB3A.BC			

Warning message will be displayed.

Please click the Yes button to make sure if you would really like to update the microcode. Download operation will be started.

MicroCode	Updata	×
?	HiTest will perform a firmware P220A70A -> P220AB3A Are you sure ?	update.
	<u>Y</u> es <u>N</u> o	

When download is completed, the following screen will be shown.

-



- 🗆 🗵 🔜 Command Utility File Edit View Port Information WARNING: DO NOT POWER OFF THE SYSTEM OR THE DRIVE DURING THE FIRMWARE DOWNLOAD PROCESS 1 Port No: AS THIS MAY PERMANENTLY DAMAGE THE DISK DRIVE !!! ALL DRIVE FEATURES WILL BE SET TO MANUFACTURING DEFAULT. Address(1) 170 Address(2) 376 *** MicroCode Update Completed !! *** Drive Information Model Name & S/N ULD MODEL ID :Hitachi HDS721616PLA380 NEW MODEL ID :Hitachi HDS721616PLA380 Hitachi HDS721616PLA: PVB300Z2R00A7D OLD Microcode : P220A70A20J NEW Microcode : P220AB3A20J FAW: P220AB3A Max. LBA 🔽 48Bit 321672959 Security Status Port | 0 Status Read 00 Status Alt Stat Firmware Update CapacityClip(DEC) Path D:\Data\Microcode\Pathfinder-II\B3A Open SetMaxLBA List Clip • Start Update 0 Tools

Please do not touch your keyboard or mouse during the update operation.



4.2: Write Abort Detection

This optional sequence is provided by the script file.

In the case of RHE=1, HiTest writes the LBA of the read hard error (RHE) and read back the same LBA. If read command is completed without error, HiTest judges the read hard error was caused by the write abort. Optional error code will be 0000 (No error) and the color bar will be in Green.



APPENDIX - A : DNR Result Entry Aid - Barcode List

DNR Login Options (Login Ver. 1.37 or later)

http://www.barcodesinc.com/generator/index.php

2005.08.04

Type	Code-128-B
Output	JPEG
Styles	Draw border
Size	W:120 H:60
Xres	1

01	CID-FAKE MODEL LABEL	NR001	NR001	11500000
02	HDD-OTHER IDENTIFY/INQUIRY ERROR	NR002	NR002	30500000
03	HDD-OTHER HITEST HANG	NR003	NR003	30600000
04	HDD-OTHER HITEST ABORTED BY OPERATOR	NR004	NR004	30700000
05	HDD-DNR-NO SPIN / ACTUATOR EXCITATION SOUND	NR005	NR005	31100000
06	HDD-DNR-NO SPIN/NO SOUND	NR006	NR006	31200000
07	HDD-DNR-SPINS BUT MOTOR UNSTABLE / STOP	NR007	NR007	31300000
08	HDD-DNR-SPINS/NO ACTUATOR LOADING	NR008	NR008	31400000
09	HDD-DNR-SPINS WITH ACTUATOR KNOCKING SOUND	NR009	NR009	31500000
10	HDD-DNR-SPINS WITH SCRATCHING SOUND AFTER HEAD LOAD	NR010	NR010	31800000
11	HDD-DNR-SPINS/HEAD LOADING SOUNDS OK	NR011	NR011	31900000
12	HDD-DNR-OTHER	NR012	NR012	32000000



APPENDIX - B : Error Code definition

HiTest provides 4 digits error code and description to text log

- * << HiTest Result >>
- * HiTest ErrCode : 0100
- * HiTest Description: NO ERROR

L1.0 STD Error Code	L1.0 STD Error Description
0100	NO ERROR
0230	SECURITY LOCKED
0240	DISK SHIFT DAMAGE
0331	DNR-NO SPIN/ACTUATOR EXCITATION SOUND
0332	DNR-NO SPIN/NO SOUND
0333	DNR-SPINS BUT MOTOR UNSTABLE/STOP
0334	DNR-SPINS/NO ACTUATOR LOADING
0335	DNR-SPINS WITH ACTUATOR KNOCKING SOUND
0338	DNR-SPINS WITH SCRATCHING SOUND AFTER HEAD LOAD
0339	DNR-SPINS/HEAD LOADING SOUNDS OK
033F	DNR-OTHER
0360	UNRECOVERD READ ERROR
0370	OTHER SMART ERROR
0371	PRE-SMART ERROR
0379	SMART SELF TEST ERROR
0380	BUSY TIMEOUT
0399	OTHER ERROR

* 0331-033F DNR error code is decided by user at DNR LogIn screen.



Thank You