APR. 06

U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

NIJ

Special REPORT

Test Results for Hardware Write Block Device: Digital Intelligence UltraBlock SATA (USB Interface)

www.ojp.usdoj.gov/nij

U.S. Department of Justice
Office of Justice Programs
810 Seventh Street N.W.
Washington, DC 20531

Alberto R. Gonzales
Attorney General

Regina B. Schofield
Assistant Attorney General

Glenn R. Schmitt
Acting Director, National Institute of Justice

This and other publications and products of the National Institute of Justice can be found at:

National Institute of Justice
www.ojp.usdoj.gov/nij

Office of Justice Programs
Partnerships for Safer Communities
www.ojp.usdoj.gov

NIJ

APR. 06

Test Results for Hardware Write Block Device: Digital Intelligence UltraBlock SATA (USB Interface)

NCJ 212961

NIJ

Glenn R. Schmitt
Acting Director

This report was prepared for the National Institute of Justice, U.S. Department of Justice, by the Office of Law Enforcement Standards of the National Institute of Standards and Technology under Interagency Agreement 2003–IJ–R–029.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

Test Results for Hardware Write Block Device: Digital Intelligence UltraBlock SATA (USB Interface)

April 2006

NIST
National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

Contents

Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice (NIJ), the research and development organization of the U.S. Department of Justice, and the National Institute of Science and Technology's (NIST's) Office of Law Enforcement Standards (OLES) and Information Technology Laboratory (ITL). CFTT is supported by other organizations, including the Federal Bureau of Investigation, the U.S. Department of Defense Cyber Crime Center, Internal Revenue Service Criminal Investigation's Electronic Crimes Program, and the U.S. Department of Homeland Security's Bureau of U.S. Immigration and Customs Enforcement and U.S. Secret Service. The objective of the CFTT program is to provide measurable assurance to practitioners, researchers, and other applicable users that the tools used in computer forensics investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensics tools and subsequent testing of specific tools against those specifications.

Test results provide the information necessary for developers to improve tools, users to make informed choices, and the legal community and others to understand the tools' capabilities. This approach to testing computer forensics tools is based on well-recognized methodologies for conformance and quality testing. The specifications and test methods are posted on the CFTT Web site (http://www.cftt.nist.gov/) for review and comment by the computer forensics community.

This document reports the results from testing the Digital Intelligence UltraBlock SATA (USB Interface) write blocker against the *Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0*, available on the CFTT Web site (http://www.cftt.nist.gov/HWB-ATP-19.pdf). This specification identifies the following top-level tool requirements:

- A hardware write block (HWB) device shall not transmit a command to a protected storage device that modifies the data on the storage device.
- An HWB device shall return the data requested by a read operation.
- An HWB device shall return without modification any access-significant information requested from the drive.
- Any error condition reported by the storage device to the HWB device shall be reported to the host.

Test results from other software packages and the CFTT test methodology can be found on NIJ's computer forensics tool testing Web page, http://www.ojp.usdoj.gov/nij/topics/ecrime/cftt.htm.

Test Results for Hardware Write Block Devices

Device Tested:	**Digital Intelligence UltraBlock SATA by Tableau**
Model:	T3u
Serial No:	000ECC01000531B2
Firmware:	October 4, 2004 15:28:51
Host to Blocker Interface:	USB
Blocker to Drive Interface:	SATA
Supplier:	DIGITAL INTELLIGENCE
Address:	1325 Pearl Street Waukesha, WI 53186 Tel: 866–DIGINTEL (866–344–4683) www.DigitalIntelligence.com

1 Results Summary by Requirements

An HWB device shall not transmit a command to a protected storage device that modifies the data on the storage device.
For all test cases run, the HWB device always blocked any commands that would have changed user or operating system data stored on a protected drive.

An HWB device shall return the data requested by a read operation.
For all test cases run, the HWB device always allowed commands to read the protected drive.

An HWB device shall return without modification any access-significant information requested from the drive.
For all test cases run, the HWB device always returned access significant information from the protected drive without modification.

Any error condition reported by the storage device to the HWB device shall be reported to the host.
For all test cases run, the HWB device always returned error codes from the protected drive without modification.

2 Test Case Selection

Because a protocol analyzer was not available for the interface between the blocker and the protected drive, the following test cases were appropriate: HWB-02, HWB-04, HWB-05, HWB-07, HWB-08, and HWB-09.

For test case HWB-04, two variations were selected: boot (attempt to boot from a protected drive) and image (use an imaging tool to attempt to write to a protected drive).

For test case HWB-07, one variation was selected: ix (use a stand-alone imaging tool ([IXimager] to read from a protected drive).

3 Testing Environment

The tests were run in the NIST CFTT lab. This section describes the hardware (test computers and hard drives) available for testing.

3.1 Test Computers

Four test computers were used: **Freddy, Max, JohnStone** and **MrsPeel**. **Freddy** and **Max** have the following configuration:

Intel Desktop Motherboard D865GB/D865PERC (with ATA-6 IDE on board controller)
BIOS Version BF86510A.86A.0053.P13
Adaptec SCSI BIOS V3.10.0
Intel Pentium® 4 CPU
SONY DVD RW DRU–530A, ATAPI CD/DVD–ROM drive
1.44MB floppy drive
Two slots for removable IDE hard disk drives
Two slots for removable SATA hard disk drives
Two slots for removable SCSI hard disk drive

JohnStone and **MrsPeel** have the following configuration:

FIC IC–VL67 (865G; S478; 800MHz)
Phoenix—Award BIOS version v6.00PG
Intel Pentium® 4 CPU
Plextor DVDR PX–716A, ATAPI CD/DVD–ROM drive
1.44MB floppy drive
Three IEEE 1394 ports
Four USB ports

3.2 Protocol Analyzer

A Data Transit bus protocol analyzer (Bus Doctor Rx) was used to monitor and record commands sent from the host to the write blocker. Two identical protocol analyzers were available for monitoring commands.

One of two Dell laptop computers (either Chip or Dale) was connected to each protocol analyzer to record commands observed by the protocol analyzer.

3.3 Hard Disk Drives

The hard disk drives that were used were selected from the SATA drives listed below. These hard drives were mounted in removable storage modules. The drives were set up in a variety of ways with the common partition types (FAT and NTFS) represented. The setup of each drive is documented below.

```
Drive label: 09
Partition table Drive /dev/hdg
09728/254/63 (max cyl/hd values)
09729/255/63 (number of cyl/hd)
156301488 total number of sectors
IDE disk: Model (WDC WD800JD-32HKA0) serial # (WD-WMAJ91407692)
 N   Start LBA Length    Start C/H/S End C/H/S   boot Partition type
 1 P 000000063 000016002 0000/001/01 0000/254/63      01 Fat12
 2 X 000016065 156280320 0001/000/01 1023/254/63      0F extended
 3 S 000000063 020482812 0001/001/01 1023/254/63      0B Fat32
 4 S 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 5 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 6 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
```

```
Drive label: 0A
Partition table Drive /dev/hde
09728/254/63 (max cyl/hd values)
09729/255/63 (number of cyl/hd)
156301488 total number of sectors
IDE disk: Model (WDC WD800JD-32HKA0) serial # (WD-WMAJ91508343)
 N   Start LBA Length    Start C/H/S End C/H/S   boot Partition type
 1 P 000000063 156280257 0000/001/01 1023/254/63 Boot 07 NTFS
 2 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 3 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 4 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
```

```
Drive label: 0C
Partition table Drive /dev/hde
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
488397168 total number of sectors
IDE disk: Model (WDC WD2500JD-22FYB0) serial # (WD-WMAEH2676627)
 N   Start LBA Length    Start C/H/S End C/H/S   boot Partition type
 1 X 000016065 419425020 0001/000/01 1023/254/63      0F extended
 2 S 000000063 061432497 0001/001/01 1023/254/63      0B Fat32
 3 S 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 4 P 419441085 000016065 1023/000/01 1023/254/63      0E Fat16
 5 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
 6 P 000000000 000000000 0000/000/00 0000/000/00      00 empty entry
```

P primary partition (1-4)
S secondary (sub) partition
X primary extended partition (1-4)
x secondary extended partition

3.4 Support Software

The software in the following table was used to send commands to the protected drive. One widely used imaging tool, IXimager, was used to generate disk activity (reads and writes) consistent with a realistic scenario of an accidental modification of an unprotected hard drive during a forensic examination. This does not imply an endorsement of the imaging tool.

Program	Description
sendSCSI	A tool to send SCSI commands wrapped in the USB or IEEE 1394 (firewire) protocols to a drive.
FS–TST	Software from the FS–TST tools was used to generate errors from the hard drive by trying to read beyond the end of the drive. The FS–TST software was also used to setup the hard drives and print partition tables and drive size.
IXimager	An imaging tool (ILook IXimager Version 1.0, August 25, 2004) for test case 03-img.

4 Test Results

The main item of interest for interpreting the test results is determining the conformance of the device to the test assertions. This section lists each test assertion and identifies the information in the log files relevant to conformance to that assertion. Conformance to each assertion tested by a given test case is evaluated by examining the Blocker Input and Blocker Output boxes of the test report summary.

4.1 Test Results Report Key

A summary of the actual test results is presented in this report. The following table presents a description of each section of the test report summary.

Heading	Description
First Line	Test case ID, name and version of device tested.
Case Summary	Test case summary from *Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0.*
Assertions Tested	The test assertions tested by the test case from *Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0.*
Tester Name	Name or initials of person executing test procedure.
Test Date	Time and date that test was started.
Test Configuration	Identification of the following: 1. Label of the protected hard drive, 2. Interface between host and blocker. 3. Interface between blocker and protected drive. 4. Protocol analyzers monitoring each interface. 5. Laptop attached to each protocol analyzer. 6. Execution environment for tool sending commands from the host.
Hard Drives Used	Description of the protected hard drive.
Blocker Input	A list of commands sent from the host to the blocker. For test cases HWB-02 and HWB-07, a list of the commands sent is provided. For test cases HWB-02 and HWB-04, a SHA1 value for the entire drive is provided for reference.

Heading	Description
	For test case HWB-05, a string of known data from a given location is provided for reference.
Blocker Output	For test cases HWB-02 and HWB-04, a SHA1 value computed after commands are sent to the protected drive is given for comparison to the reference SHA1 value. For test case HWB-05, a string read from a given location is provided for comparison to known data. For test case HWB-08, the number of sectors determined for the protected drive and the partition table are provided. For test case HWB-09, any error return obtained by trying to access a nonexistent sector of the drive is provided.
Results	Expected and actual results for each assertion tested.
Analysis	Whether or not the expected results were achieved.

4.2 Test Details

Test Case HWB-02 Variation HWB-02 Digital Intelligence UltraBlock SATA	
Case Summary:	HWB-02 Identify modifying commands blocked by the HWB.
Assertions Tested:	HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device.
Tester Name:	brl
Test Date:	run start Thu Sep 1 15:16:12 2005
Test Configuration:	HOST: freddy HostToBlocker Monitor: DALE HostToBlocker PA: AA00155 HostToBlocker Interface: USB BlockerToDrive Monitor: none BlockerToDrive PA: none BlockerToDrive Interface: SATA Run Environment: linux(HELIX)
Drives:	Protected drive: 0C 0C is a SATA drive with 488397168 sectors (250 GB)
Blocker Input:	SHA of 0C is 3F42637C8316A7AC9DB12CAD263B35105EF81E4C - Commands Sent to Blocker BULK CBW: READ(10) BULK CBW: REQUEST SENSE

<table>
<tr><th colspan="3">Test Case HWB-02 Variation HWB-02 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td></td><td colspan="2">BULK CBW: SEND(6)
BULK CBW: WRITE & VERIFY
BULK CBW: WRITE BUFFER
BULK CBW: WRITE LONG
BULK CBW: WRITE SAME
BULK CBW: WRITE(10)
BULK CBW: WRITE(12)
BULK CBW: WRITE/VERIFY</td></tr>
<tr><td>Blocker Output:</td><td colspan="2">CMD: /tmp/diskhash.csh hwb-02 max brl /dev/sdb 0C -after 3F42637C8316A7AC9DB12CAD263B35105EF81E4C -</td></tr>
<tr><td>Results:</td><td colspan="2"><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-01 Modifying commands blocked</td><td>Modifying commands blocked</td></tr></table></td></tr>
<tr><td>Analysis:</td><td colspan="2">Expected results achieved</td></tr>
</table>

<table>
<tr><th colspan="3">Test Case HWB-04 Variation HWB-04-boot Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Case Summary:</td><td colspan="2">HWB-04 Attempt to modify a protected drive with forensic tools.</td></tr>
<tr><td>Assertions Tested:</td><td colspan="2">HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device.</td></tr>
<tr><td>Tester Name:</td><td colspan="2">JRL</td></tr>
<tr><td>Test Date:</td><td colspan="2">run start Sun Sep 11 11:24:07 2005
run finish Sun Sep 11 11:31:07 2005</td></tr>
<tr><td>Test Configuration:</td><td colspan="2">HOST: MrsPeel
HostToBlocker Monitor: Dale
HostToBlocker PA: AA00111
HostToBlocker Interface: USB
BlockerToDrive Monitor: none
BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: Boot</td></tr>
<tr><td>Drives:</td><td colspan="2">Protected drive: 0A
0A is a SATA drive with 156301488 sectors (80 GB)</td></tr>
<tr><td>Blocker Input:</td><td colspan="2">SHA of 0A is 8ECF7CF671274B1B757BCD4FD871C6BD7A9DFCF1 -
Commands are sent to the blocker by attempting to boot the protected drive.</td></tr>
<tr><td>Blocker Output:</td><td colspan="2">CMD: ../../../diskhash.csh HWB-04-boot Nancy JRL /dev/sda 0A -after 8ECF7CF671274B1B757BCD4FD871C6BD7A9DFCF1 -</td></tr>
<tr><td>Results:</td><td colspan="2"><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-01 Modifying commands blocked</td><td>Modifying commands blocked</td></tr></table></td></tr>
<tr><td>Analysis:</td><td colspan="2">Expected results achieved</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-04 Variation HWB-04-img Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Case Summary:</td><td>HWB-04 Attempt to modify a protected drive with forensic tools.</td></tr>
<tr><td>Assertions Tested:</td><td>HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device.</td></tr>
<tr><td>Tester Name:</td><td>JRL</td></tr>
<tr><td>Test Date:</td><td>run start Sun Sep 11 10:33:28 2005
run finish Sun Sep 11 10:57:58 2005</td></tr>
<tr><td>Test Configuration:</td><td>HOST: MrsPeel
HostToBlocker Monitor: Dale
HostToBlocker PA: AA00111
HostToBlocker Interface: USB
BlockerToDrive Monitor: none
BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: IXimager</td></tr>
<tr><td>Drives:</td><td>Protected drive: 09
09 is a SATA drive with 156301488 sectors (80 GB)</td></tr>
<tr><td>Blocker Input:</td><td>SHA of 09 is FE7F2F3B735B37F685E13E14AA5FCF1C42561E08 -
Commands are sent to the blocker by attempting to create an image file on the protected drive.</td></tr>
<tr><td>Blocker Output:</td><td>CMD: ../../../diskhash.csh HWB-04-img Nancy JRL /dev/sda 09 -after FE7F2F3B735B37F685E13E14AA5FCF1C42561E08 -</td></tr>
<tr><td>Results:</td><td><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-01 Modifying commands blocked</td><td>Modifying commands blocked</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-05 Variation hwb-05 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Case Summary:</td><td>HWB-05 Identify read commands allowed by the HWB.</td></tr>
<tr><td>Assertions Tested:</td><td>HWB-AM-02 If the host sends a read category operation to the HWB and no error is returned from the protected storage device to the HWB, then the data addressed by the original read operation is returned to the host.</td></tr>
<tr><td>Tester Name:</td><td>JRL</td></tr>
<tr><td>Test Date:</td><td>run start Sun Sep 11 10:02:03 2005
run finish Sun Sep 11 10:06:38 2005</td></tr>
<tr><td>Test Configuration:</td><td>HOST: MrsPeel
HostToBlocker Monitor: Dale
HostToBlocker PA: AA00111
HostToBlocker Interface: USB
BlockerToDrive Monitor: none</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-05 Variation hwb-05 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td></td><td>BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: Helix</td></tr>
<tr><td>Drives:</td><td>Protected drive: 0A
0A is a SATA drive with 156301488 sectors (80 GB)</td></tr>
<tr><td>Blocker Input:</td><td>Commands Sent to Blocker
Read sector 32767 for the string: 00032/008/08 000000032767</td></tr>
<tr><td>Blocker Output:</td><td>00032/008/08 000000032767</td></tr>
<tr><td>Results:</td><td><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-02 Read commands allowed</td><td>Read commands allowed</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-07 Variation hwb-07 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Case Summary:</td><td>HWB-07 Read a protected drive with forensic tools.</td></tr>
<tr><td>Assertions Tested:</td><td>HWB-AM-02 If the host sends a read category operation to the HWB and no error is returned from the protected storage device to the HWB, then the data addressed by the original read operation is returned to the host.
HWB-AM-03 If the host sends an information category operation to the HWB and if there is no error on the protected storage device, then any returned access-significant information is returned to the host without modification.</td></tr>
<tr><td>Tester Name:</td><td>brl</td></tr>
<tr><td>Test Date:</td><td>run start Fri Sep 2 07:56:48 2005
run finish Fri Sep 2 08:20:25 2005</td></tr>
<tr><td>Test Configuration:</td><td>HOST: JohnStone
HostToBlocker Monitor: Dale
HostToBlocker PA: AA00155
HostToBlocker Interface: USB
BlockerToDrive Monitor: none
BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: IX(imager)</td></tr>
<tr><td>Drives:</td><td>Protected drive: 0C
0C is a SATA drive with 488397168 sectors (250 GB)</td></tr>
<tr><td>Blocker Input:</td><td>Commands Sent to Blocker
Read(10)</td></tr>
<tr><td>Blocker</td><td>Sep 2 08:05:01 iimager: User entered the Image Device Menu</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-07 Variation hwb-07 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Output:</td><td>Sep 2 08:05:13 iimager: User exited the Image Device Menu
Sep 2 08:06:17 iimager: User entered the Display Image File Information Menu
Sep 2 08:06:26 iimager: User exited the Display Image File Information Menu
Sep 2 08:06:39 iimager: User entered the Image Device Menu
Sep 2 08:06:42 iimager: User entered the Image Target Menu
Sep 2 08:06:48 iimager: User selected ILook Default Image Format
Sep 2 08:06:59 iimager: User selected CD-ROM sized Image chunks
Sep 2 08:08:42 iimager: The Image Target Menu provides you with a list of the devices that are connected to your computer. The Image Device Menu provides you with a list of the devices that are connected to your computer. Use the 'Up' and 'Down' arrow keys on your keyboard to move the highlighted area until the operation you wish to perform is highlighted. Then press 'Enter' on your keyboard so that your input will be accepted. Pressing the 'Escape' key on your keyboard will return you to the Main Menu.
Sep 2 08:08:46 iimager: User exited the Image Target Menu
Sep 2 08:09:16 iimager: User entered the Image Target Menu
Sep 2 08:09:25 iimager: User selected ILook Default Image Format
Sep 2 08:09:55 iimager: Image is being stored to /dev/sdc1
Sep 2 08:09:55 iimager: Beginning Image operation
Sep 2 08:09:55 iimager: Opened output file '/ILookImager/ILook.013/diSATAHWB07001.asb'
Sep 2 08:09:55 iimager: Image is being stored to /ILook.013/diSATAHWB07001.asb
Sep 2 08:09:55 iimager: Image is being stored to /dev/sdc1
Sep 2 08:09:55 iimager: Image is being stored to /ILook.013/diSATAHWB07001.asb
Sep 2 08:09:55 iimager: Beginning Image operation for 8225280 bytes
Sep 2 08:09:56 iimager: Image Complete
Sep 2 08:09:56 iimager: Image was completed successfully.
Sep 2 08:09:56 iimager: Image Speed : 0.000 MB/sec
Sep 2 08:10:03 iimager: User exited the Image Target Menu
Sep 2 08:10:03 iimager: User exited the Image Device Menu</td></tr>
<tr><td>Results:</td><td>
<table>
<tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr>
<tr><td>AM-02 Read commands allowed</td><td>Read commands allowed</td></tr>
<tr><td>AM-03 Access Significant Information unaltered</td><td>Access Significant Information unaltered</td></tr>
</table>
</td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

Test Case HWB-08 Variation hwb-08 Digital Intelligence UltraBlock SATA	
Case Summary:	HWB-08 Identify access significant information unmodified by the HWB.

<table>
<tr><th colspan="2">Test Case HWB-08 Variation hwb-08 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Assertions Tested:</td><td>HWB-AM-03 If the host sends an information category operation to the HWB and if there is no error on the protected storage device, then any returned access-significant information is returned to the host without modification.</td></tr>
<tr><td>Tester Name:</td><td>brl</td></tr>
<tr><td>Test Date:</td><td>run start Thu Sep 1 14:25:43 2005
run finish Thu Sep 1 14:31:01 2005</td></tr>
<tr><td>Test Configuration:</td><td>HOST: max
HostToBlocker Monitor: none
HostToBlocker PA: none
HostToBlocker Interface: USB
BlockerToDrive Monitor: none
BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: Linux(HELIX)</td></tr>
<tr><td>Drives:</td><td>Protected drive: 0C
0C is a SATA drive with 488397168 sectors (250 GB)</td></tr>
<tr><td>Blocker Output:</td><td>cmd: ./partab hwb-08 max brl /dev/sdb 0C
488397168 total number of sectors

Drive label: 0C
Partition table Drive /dev/sdb
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
488397168 total number of sectors
Non-IDE disk
Model (00JD-22FYB0) serial # (DWW-MAEH2676627)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 X 000016065 419425020 0001/000/01 1023/254/63 0F extended
2 S 000000063 061432497 0001/001/01 1023/254/63 0B Fat32
3 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 419441085 000016065 1023/000/01 1023/254/63 0E Fat16
5 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
6 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td></tr>
<tr><td>Results:</td><td><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-03 Access Significant Information unaltered</td><td>Access Significant Information unaltered</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-09 Variation hwb-09 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Case Summary:</td><td>HWB-09 Determine if an error on the protected drive is returned to the host.</td></tr>
<tr><td>Assertions Tested:</td><td>HWB-AM-04 If the host sends an operation to the HWB and if the operation results in an unresolved error on the protected storage device, then the HWB shall return an error status code to the host.</td></tr>
<tr><td>Tester Name:</td><td>brl</td></tr>
<tr><td>Test Date:</td><td>run start Thu Sep 1 14:37:29 2005
run finish Thu Sep 1 14:42:47 2005</td></tr>
</table>

<table>
<tr><th colspan="2">Test Case HWB-09 Variation hwb-09 Digital Intelligence UltraBlock SATA</th></tr>
<tr><td>Test Configuration:</td><td>HOST: max
HostToBlocker Monitor: none
HostToBlocker PA: none
HostToBlocker Interface: USB
BlockerToDrive Monitor: none
BlockerToDrive PA: none
BlockerToDrive Interface: SATA
Run Environment: Linux(HELIX)</td></tr>
<tr><td>Drives:</td><td>Protected drive: 0C
0C is a SATA drive with 488397168 sectors (250 GB)</td></tr>
<tr><td>Blocker Output:</td><td>30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
488397168 total number of sectors
cmd: ./diskchg hwb-08 max brl /dev/sdb -read 588397168 0 1
Disk addr lba 588397168 C/H/S 36626/7/38 offset 0
Disk read error 0xFFFFFFFF at sector 36626/7/38</td></tr>
<tr><td>Results:</td><td><table><tr><td>Assertion & Expected Result</td><td>Actual Result</td></tr><tr><td>AM-04 Error code returned</td><td>Error code returned</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. NIJ's mission is to advance scientific research, development, and evaluation to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools

1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.
2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.
3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

Dissemination

4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.
5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

Agency management

6. Practice fairness and openness in the research and development process.
7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

Program Areas

In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

To find out more about the National Institute of Justice, please visit:

http://www.ojp.usdoj.gov/nij

or contact:

National Criminal Justice
Reference Service
P.O. Box 6000
Rockville, MD 20849–6000
800–851–3420
e-mail: *askncjrs@ncjrs.org*