



**NIJ**

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**REPORT**

**Test Results for Hardware Write Block  
Device: FastBloc FE (FireWire Interface)**

**National Institute of Justice**

**U.S. Department of Justice  
Office of Justice Programs**

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Device: FastBloc FE (FireWire  
Interface)



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**June 2007**

**NIST**

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

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## 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 Standards 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, the Internal Revenue Service Criminal Investigation Division'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 project 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 for testing computer forensic tools is based on well-recognized methodologies for conformance and quality testing. The specifications and test methods are posted on the CFTT Web site ([Computer Forensics Tool Testing Program](#)) for review and comment by the computer forensics community.

This document reports the results from testing the **FastBloc FE (FireWire Interface)** write blocker against the *Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0*, available on the CFTT web site ([Hardware Write Blocker \(HWB\) Assertions and Test Plan](#)). 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 shall return the data requested by a read operation.
- An HWB shall return without modification any access-significant information requested from the drive.
- Any error condition reported by the storage device to the HWB shall be reported to the host.

Test results from other software packages and the CFTT tool methodology can be found on NIJ's computer forensics tool testing Web page, [National Institute of Justice](#).

# Test Results for Hardware Write Block Devices

Device Tested: FastBloc Field Edition (Firewire Interface)  
Model: FastBloc FE  
Serial No: 172900

Host to Blocker Interface: FIREWIRE  
Blocker to Drive Interface: IDE

Supplier: Guidance Software, Inc.

Address: 215 North Marengo Ave.  
Pasadena, CA 91101  
Tel: 626-229-9191  
Fax: 626-229-9199

## 1 Results Summary by Requirements

**An HWB shall not transmit a command to a protected storage device that modifies the data on the storage device.**

For all test cases run, the device always blocked any commands that would have changed user or operating system data stored on a protected drive.

**An HWB shall return the data requested by a read operation.**

For all test cases run, the device always allowed commands to read the protected drive.

**An HWB shall return without modification any access-significant information requested from the drive.**

For all test cases run, the device always returned access-significant information from the protected drive without modification.

**Any error condition reported by the storage device to the HWB shall be reported to the host.**

For all test cases run, the device always returned error codes from the protected drive without modification.

## 2 Test Case Selection

Since a protocol analyzer was available for the interface between the blocker and the protected drive, the following test cases were appropriate: HWB-01, HWB-02, HWB-03, HWB-05, HWB-06, HWB-08, and HWB-09.



For test case HWB-03, two variations were selected: file (attempt to use operating system commands to create and delete file system objects, such as files and directories, from a protected drive) and image (use an imaging tool to attempt to write to 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 Computer

One test computer was used, **Max**, with 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

#### 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 used in testing are described below.

```
Drive label: 8B
Partition table Drive /dev/sda
00011/254/63 (max cyl/hd values)
00012/255/63 (number of cyl/hd)
201600 total number of sectors
Non-IDE disk
Model (0EB-00CSF0      ) serial # (WD-WTAAV4044563)
 N  Start LBA Length      Start C/H/S End C/H/S   boot Partition type
 1 P 000000063 000096327 0000/001/01 0005/254/63   0B Fat32
 2 X 000096390 000096390 0006/000/01 0011/254/63   05 extended
 3 S 000000063 000096327 0006/001/01 0011/254/63   07 NTFS
 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
```

<pre> Drive label: A8 Partition table Drive /dev/sda 00011/254/63 (max cyl/hd values) 00012/255/63 (number of cyl/hd) 201600 total number of sectors Non-IDE disk Model (0BB-00AUA1      ) serial # (WD-WMA6Y3401179)  N  Start LBA Length      Start C/H/S End C/H/S  boot Partition type  1 P 000000063 000096327 0000/001/01 0005/254/63  0B Fat32  2 X 000096390 000096390 0006/000/01 0011/254/63   05 extended  3 S 000000063 000096327 0006/001/01 0011/254/63   07 NTFS  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 </pre>							
<pre> Drive label: BE Partition table Drive /dev/sda 24320/254/63 (max cyl/hd values) 24321/255/63 (number of cyl/hd) 390721968 total number of sectors Non-IDE disk Model (00JB-00KFA0    ) serial # (      WD-WMAMR10220)  N  Start LBA Length      Start C/H/S End C/H/S  boot Partition type  1 P 000000063 039070017 0000/001/01 1023/254/63  0C Fat32X  2 X 039070080 351646785 1023/000/01 1023/254/63  0F extended  3 S 000000063 307194867 1023/001/01 1023/254/63   07 NTFS  4 x 307194930 000016065 1023/000/01 1023/254/63   05 extended  5 S 000000063 000016002 1023/001/01 1023/254/63   01 Fat12  6 x 307210995 004096575 1023/000/01 1023/254/63   05 extended  7 S 000000063 004096512 1023/001/01 1023/254/63   06 Fat16  8 S 000000000 000000000 0000/000/00 0000/000/00   00 empty entry  9 P 000000000 000000000 0000/000/00 0000/000/00   00 empty entry 10 P 000000000 000000000 0000/000/00 0000/000/00   00 empty entry </pre>							

- 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, Aug 25 2004) for test case 04-img.

<b>Program</b>	<b>Description</b>
Helix 1.7	Linux bootable CD runtime environment.

## 4 Test Results

The main item of interest for interpretation of the test results is determining the conformance of the device to the test assertions. Conformance of each assertion tested by a given test case is evaluated by examination of 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.

<b>Heading</b>	<b>Description</b>
First Line	Test case ID, name, model, and interface of device tested.
Case Summary	Test case summary from <i>Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0</i> .
Assertions Tested	The test assertions applicable to the test case, selected from <i>Hardware Write Blocker (HWB) Assertions and Test Plan Version 1.0</i> .
Tester Name	Name or initials of person executing test procedure.
Test Date	Time and date that test was started and completed.
Test Configuration	Identification of the following: <ol style="list-style-type: none"> <li>1. Host computer for executing the test case.</li> <li>2. Laptop attached to each protocol analyzer.</li> <li>3. Protocol analyzers monitoring each interface.</li> <li>4. Interface between host and blocker.</li> <li>5. Interface between blocker and protected drive.</li> <li>6. Execution environment for tool sending commands from the host.</li> </ol>
Hard Drives Used	Description of the protected hard drive.
Blocker Input	For test case HWB-01 and HWB-02, a list of each command sent is provided.  For test case HWB-02, an SHA1 value for the entire drive is provided for reference.  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-07, an SHA1 value computed after commands are sent to the protected drive is given for comparison to the reference SHA1 value.

Heading	Description
	<p>For test case HWB-05, a string read from a given location is provided for comparison to known data.</p> <p>For test case HWB-08, the number of sectors determined for the protected drive and the partition table are provided.</p> <p>For test case HWB-09, any error return obtained by trying to access a nonexistent sector of the drive is provided.</p>
Results	Expected and actual results for each assertion tested.
Analysis	Whether or not the expected results were achieved.

## 4.2 Test Details

### 4.2.1 HWB-01

Test Case HWB-01 Variation hwb-01 FastBloc FE (Firewire)																																													
Case Summary:	HWB-01 Identify commands blocked by the HWB.																																												
Assertions Tested:	<p>HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device.</p> <p>HWB-AM-05 The action that a HWB device takes for any commands not assigned to the modifying, read or information categories is defined by the vendor.</p>																																												
Tester Name:	kbr																																												
Test Date:	<p>run start Tue Aug 1 10:59:11 2006</p> <p>run finish Tue Aug 1 11:22:49 2006</p>																																												
Test Configuration:	<p>HOST: max</p> <p>HostToBlocker Monitor: chip</p> <p>HostToBlocker PA: aa00111</p> <p>HostToBlocker Interface: fw</p> <p>BlockerToDrive Monitor: dale</p> <p>BlockerToDrive PA: aa00155</p> <p>BlockerToDrive Interface: ide</p> <p>Run Environment: helix</p>																																												
Drives:	<p>Protected drive: BE</p> <p>BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)</p>																																												
Blocker Input:	<p>Commands Sent to Blocker</p> <table border="1" data-bbox="370 1348 870 1900"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr><td>1</td><td>AC MANAGE</td></tr> <tr><td>1</td><td>ASYNCHRONOUS CONNECTION</td></tr> <tr><td>1</td><td>BLANK</td></tr> <tr><td>1</td><td>CHANNEL USAGE</td></tr> <tr><td>1</td><td>CHG DEFINITN</td></tr> <tr><td>1</td><td>CLOS SESSION</td></tr> <tr><td>1</td><td>COMPARE</td></tr> <tr><td>1</td><td>CONNECT</td></tr> <tr><td>1</td><td>CONNECT AV</td></tr> <tr><td>1</td><td>CONNECTIONS</td></tr> <tr><td>1</td><td>COPY</td></tr> <tr><td>1</td><td>COPY/VERIFY</td></tr> <tr><td>1</td><td>CREATE DESCRIPTOR</td></tr> <tr><td>1</td><td>DIGITAL INPUT</td></tr> <tr><td>1</td><td>DIGITAL OUTPUT</td></tr> <tr><td>1</td><td>DISCONNECT</td></tr> <tr><td>1</td><td>DISCONNECT AV</td></tr> <tr><td>1</td><td>ERASE</td></tr> <tr><td>1</td><td>ERASE(10)</td></tr> <tr><td>1</td><td>FORMAT UNIT</td></tr> <tr><td>1</td><td>GET CONFIG</td></tr> </tbody> </table>	Count	Commands	1	AC MANAGE	1	ASYNCHRONOUS CONNECTION	1	BLANK	1	CHANNEL USAGE	1	CHG DEFINITN	1	CLOS SESSION	1	COMPARE	1	CONNECT	1	CONNECT AV	1	CONNECTIONS	1	COPY	1	COPY/VERIFY	1	CREATE DESCRIPTOR	1	DIGITAL INPUT	1	DIGITAL OUTPUT	1	DISCONNECT	1	DISCONNECT AV	1	ERASE	1	ERASE(10)	1	FORMAT UNIT	1	GET CONFIG
Count	Commands																																												
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1	ERASE(10)																																												
1	FORMAT UNIT																																												
1	GET CONFIG																																												

Test Case HWB-01 Variation hwb-01 FastBloc FE (Firewire)		
1	GET EVNT/STS	
1	GET PERFRMNC	
1	INPUT PLUG SIGNAL FORMAT	
1	INPUT SELECT	
1	INQUIRY	
1	LK/UNLK CACH	
1	LOAD/UNLOAD	
1	LOG SELECT	
1	LOG SENSE	
1	MECH STATUS	
1	MEDIUM SCAN	
2	MODE SELECT	
2	MODE SENSE(10)	
1	OBJECT NUMBER SELECT	
1	OPEN DESCRIPTOR	
1	OPEN INFO BLOCK	
1	OUTPUT PLUG SIGNAL FORMAT	
1	OUTPUT PRESET	
1	PAUSE/RESUME	
1	PERSISTENT RESERVE IN	
1	PERSISTENT RESERVE OUT	
1	PLAY AUD IDX	
2	PLAY AUDIO	
1	PLAY AUD MSF	
1	PLAY CD	
1	PLUG INFO	
1	PLY TRK RLTV	
1	PLY TRK RLTV(12)	
1	PRE-FETCH	
1	PREVENT/ALLOW MEDIUM REMOVAL	
1	RD BUF CPCTY	
1	RD GENERATN	
1	RD MSTR CUE	
1	RD STRUCTURE	
1	RD SUB-CHNL	
1	RD TOC/PMA	
1	RD UPDATED BLK	
548	READ(10)	
1	READ(12)	
1	READ BUFFER	
1	READ BULK LIMITS	
1	READ CAPACITY	
1	READ CD	
1	READ CD MSF	
2	READ DEFECT	
1	READ DESCRIPTOR	
1	READ ELEMENT STATUS	
1	READ FORMAT CAPACITY	
1	READ HEADER	
1	READ INFO BLOCK	
1	READ LONG	
1	READ REVERSE	
1	READ STATUS ATTACHED	
1	REASSIGN BLK	
1	RECEIVE DIAGNOSTIC RESULTS	
1	RECOVER BUFF DATA	
1	RELEASE(10)	
1	RELEASE(6)	
1	REPAIR RZONE	
4	REPORT KEY	
1	REPORT LUNS	
1	REQ VOL ADDR	
1	RESERVE	
1	RESERVE(10)	
1	RESERVE(6)	
34	RESERVED	
1	REWIND/REZERO	
1	SCAN	

Test Case HWB-01 Variation hwb-01 FastBloc FE (Firewire)												
	1	SEARCH DESCRIPTOR										
	1	SECURITY										
	1	SEEK(10)										
	1	SEEK(6)										
	1	SEND CUE SHT										
	1	SEND DIAGNOSTIC										
	1	SEND EVENT										
	6	SEND KEY										
	1	SET CD SPEED										
	1	SET LIMITS										
	1	SET RD AHEAD										
	1	SET STREAMNG										
	1	SIGNAL SOURCE										
	1	SND OPC INFO										
	1	SND STRUCTUR										
	1	SPACE										
	2	SRCH DATA EQ										
	1	SRCH DATA HI										
	1	SRCH DATAHI										
	2	SRCH DATA LO										
	1	START/STOP										
	1	STOP PLY/SCN										
	1	SUBUNIT INFO										
	1	SYNCH CACHE										
	2	TEST UNIT READY										
	1	UNIT INFO										
	1	UPDATE BLOCK										
	1	VENDOR-DEPENDENT										
	1	VERIFY(10)										
	1	VERIFY(12)										
	1	VERIFY(6)										
	2	WRITE(10)										
	1	WRITE(12)										
	1	WRITE BUFFER										
	1	WRITE DESCRIPTOR										
	1	WRITE FILEMARK										
	1	WRITE INFO BLOCK										
	1	WRITE LONG										
	1	WRITE SAME										
	2	WRITE/VERIFY										
	1	XDREAD(10)										
	1	XDWRITE(10)										
	1	XDWRITEREAD(10)										
	1	XPWRITE(10)										
	133 commands sent											
Blocker Output:	Commands Allowed by Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>548</td> <td>25=READ DMA EXT</td> </tr> <tr> <td>1</td> <td>42=READ/V W/ EXT</td> </tr> <tr> <td>4</td> <td>70=SEEK</td> </tr> <tr> <td>1</td> <td>EC=IDENTIFY DRIVE</td> </tr> </tbody> </table> 133 commands sent, 4 commands allowed		Count	Commands	548	25=READ DMA EXT	1	42=READ/V W/ EXT	4	70=SEEK	1	EC=IDENTIFY DRIVE
Count	Commands											
548	25=READ DMA EXT											
1	42=READ/V W/ EXT											
4	70=SEEK											
1	EC=IDENTIFY DRIVE											
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-01 Modifying commands blocked</td> <td>Modifying commands blocked</td> </tr> <tr> <td>AM-05 HWB behavior recorded</td> <td>HWB behavior recorded</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-01 Modifying commands blocked	Modifying commands blocked	AM-05 HWB behavior recorded	HWB behavior recorded					
Assertion & Expected Result	Actual Result											
AM-01 Modifying commands blocked	Modifying commands blocked											
AM-05 HWB behavior recorded	HWB behavior recorded											
Analysis:	Expected results achieved											

## 4.2.2 HWB-02

Test Case HWB-02 Variation hwb-02 FastBloc FE (Firewire)																								
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:	Kbr																							
Test Date:	run start Tue Aug 22 10:20:42 2006 run finish Tue Aug 22 13:42:06 2006																							
Test Configuration:	HOST: max HostToBlocker Monitor: chip HostToBlocker PA: aa00111 HostToBlocker Interface: fw BlockerToDrive Monitor: none BlockerToDrive PA: none BlockerToDrive Interface: ide Run Environment: helix																							
Drives:	Protected drive: BE BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)																							
Blocker Input:	SHA of BE is 8F470B10EA370171543380CA0CD55B406C6359BD - Commands Sent to Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>42</td> <td>READ(10)</td> </tr> <tr> <td>2</td> <td>WRITE(10)</td> </tr> <tr> <td>1</td> <td>WRITE(12)</td> </tr> <tr> <td>1</td> <td>WRITE BUFFER</td> </tr> <tr> <td>1</td> <td>WRITE LONG</td> </tr> <tr> <td>1</td> <td>WRITE SAME</td> </tr> <tr> <td>2</td> <td>WRITE/VERIFY</td> </tr> <tr> <td>1</td> <td>XDWRITE(10)</td> </tr> <tr> <td>1</td> <td>XDWRITEREAD(10)</td> </tr> <tr> <td>1</td> <td>XPWRITE(10)</td> </tr> </tbody> </table>		Count	Commands	42	READ(10)	2	WRITE(10)	1	WRITE(12)	1	WRITE BUFFER	1	WRITE LONG	1	WRITE SAME	2	WRITE/VERIFY	1	XDWRITE(10)	1	XDWRITEREAD(10)	1	XPWRITE(10)
Count	Commands																							
42	READ(10)																							
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1	XPWRITE(10)																							
Blocker Output:	CMD: /mnt/floppy/diskhash.csh hwb-02 max kbr /dev/sdc be -after 8F470B10EA370171543380CA0CD55B406C6359BD -																							
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-01 Modifying commands blocked</td> <td>Modifying commands blocked</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-01 Modifying commands blocked	Modifying commands blocked																			
Assertion & Expected Result	Actual Result																							
AM-01 Modifying commands blocked	Modifying commands blocked																							
Analysis:	Expected results achieved																							

### 4.2.3 HWB-03-file

<b>Test Case HWB-03 Variation hwb-03-file FastBloc FE (Firewire)</b>							
Case Summary:	HWB-03 Identify commands blocked by the HWB while attempting to modify a protected drive with forensic tools.						
Assertions Tested:	HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device. HWB-AM-05 The action that a HWB device takes for any commands not assigned to the modifying, read or information categories is defined by the vendor.						
Tester Name:	Mrw						
Test Date:	run start Wed Aug 2 14:38:30 2006 run finish Wed Aug 2 15:27:02 2006						
Test Configuration:	HOST: max HostToBlocker Monitor: chip HostToBlocker PA: aa00111 HostToBlocker Interface: fw BlockerToDrive Monitor: dale BlockerToDrive PA: aa00155 BlockerToDrive Interface: ide Run Environment: wxp						
Drives:	Protected drive: BE BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)						
Blocker Input:	Commands Sent to Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>READ(10)</td> </tr> <tr> <td>42</td> <td>WRITE(10)</td> </tr> </tbody> </table>	Count	Commands	8	READ(10)	42	WRITE(10)
Count	Commands						
8	READ(10)						
42	WRITE(10)						
Blocker Output:	Commands Allowed by Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>25=READ DMA EXT</td> </tr> </tbody> </table>	Count	Commands	8	25=READ DMA EXT		
Count	Commands						
8	25=READ DMA EXT						
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-01 Modifying commands blocked</td> <td>Modifying commands blocked</td> </tr> <tr> <td>AM-05 HWB behavior recorded</td> <td>HWB behavior recorded</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-01 Modifying commands blocked	Modifying commands blocked	AM-05 HWB behavior recorded	HWB behavior recorded
Assertion & Expected Result	Actual Result						
AM-01 Modifying commands blocked	Modifying commands blocked						
AM-05 HWB behavior recorded	HWB behavior recorded						
Analysis:	Expected results achieved						



## 4.2.4 HWB-03-img

<b>Test Case HWB-03 Variation hwb-03-img FastBloc FE (Firewire)</b>							
Case Summary:	HWB-03 Identify commands blocked by the HWB while attempting to modify a protected drive with forensic tools.						
Assertions Tested:	HWB-AM-01 The HWB shall not transmit any modifying category operation to the protected storage device. HWB-AM-05 The action that a HWB device takes for any commands not assigned to the modifying, read or information categories is defined by the vendor.						
Tester Name:	kbr						
Test Date:	run start Wed Aug 2 14:14:40 2006 run finish Wed Aug 2 14:22:26 2006						
Test Configuration:	HOST: max HostToBlocker Monitor: chip HostToBlocker PA: aa00111 HostToBlocker Interface: fw BlockerToDrive Monitor: dale BlockerToDrive PA: aa00155 BlockerToDrive Interface: ide Run Environment: IX						
Drives:	Protected drive: BE BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)						
Blocker Input:	Commands Sent to Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>READ(10)</td> </tr> <tr> <td>267</td> <td>WRITE(10)</td> </tr> </tbody> </table>	Count	Commands	1	READ(10)	267	WRITE(10)
Count	Commands						
1	READ(10)						
267	WRITE(10)						
Blocker Output:	Commands Allowed by Blocker <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25=READ DMA EXT</td> </tr> </tbody> </table>	Count	Commands	1	25=READ DMA EXT		
Count	Commands						
1	25=READ DMA EXT						
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-01 Modifying commands blocked</td> <td>Modifying commands blocked</td> </tr> <tr> <td>AM-05 HWB behavior recorded</td> <td>HWB behavior recorded</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-01 Modifying commands blocked	Modifying commands blocked	AM-05 HWB behavior recorded	HWB behavior recorded
Assertion & Expected Result	Actual Result						
AM-01 Modifying commands blocked	Modifying commands blocked						
AM-05 HWB behavior recorded	HWB behavior recorded						
Analysis:	Expected results achieved						

## 4.2.5 HWB-05

<b>Test Case HWB-05 Variation hwb-05 FastBloc FE (Firewire)</b>					
Case Summary:	HWB-05 Identify read commands allowed by the HWB.				
Assertions Tested:	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.				
Tester Name:	kbr				
Test Date:	run start Thu Aug 3 13:32:51 2006 run finish Thu Aug 3 13:40:16 2006				
Test Configuration:	HOST: max HostToBlocker Monitor: chip HostToBlocker PA: aa00111 HostToBlocker Interface: fw BlockerToDrive Monitor: none BlockerToDrive PA: none BlockerToDrive Interface: ide Run Environment: helix				
Drives:	Protected drive: A8 A8 is a WDC WD200BB-00AUA1 configured to report 201600 sectors (103 MB)				
Blocker Input:	Commands Sent to Blocker Read sector 32767 for the string: 00002/010/08 000000032767				
Blocker Output:	00002/010/08 000000032767				
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-02 Read commands allowed</td> <td>Read commands allowed</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-02 Read commands allowed	Read commands allowed
Assertion & Expected Result	Actual Result				
AM-02 Read commands allowed	Read commands allowed				
Analysis:	Expected results achieved				

## 4.2.6 HWB-06

<b>Test Case HWB-06 Variation hwb-06 FastBloc FE (Firewire)</b>									
Case Summary:	HWB-06 Identify read and information commands used by forensic tools and allowed by the HWB.								
Assertions Tested:	<p>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.</p> <p>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.</p> <p>HWB-AM-05 The action that a HWB device takes for any commands not assigned to the modifying, read or information categories is defined by the vendor.</p>								
Tester Name:	kbr								
Test Date:	<p>run start Thu Aug 3 13:46:30 2006</p> <p>run finish Thu Aug 3 14:06:02 2006</p>								
Test Configuration:	<p>HOST: max</p> <p>HostToBlocker Monitor: chip</p> <p>HostToBlocker PA: aa00111</p> <p>HostToBlocker Interface: fw</p> <p>BlockerToDrive Monitor: dale</p> <p>BlockerToDrive PA: aa00155</p> <p>BlockerToDrive Interface: ide</p> <p>Run Environment: IX</p>								
Drives:	<p>Protected drive: 8B</p> <p>8B is a WDC WD200EB-00CSF0 configured to report 201600 sectors (103 MB)</p>								
Blocker Input:	<p>Commands Sent to Blocker</p> <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LK/UNLK CACH</td> </tr> <tr> <td>778</td> <td>READ(10)</td> </tr> </tbody> </table> <p>2 commands sent</p>	Count	Commands	1	LK/UNLK CACH	778	READ(10)		
Count	Commands								
1	LK/UNLK CACH								
778	READ(10)								
Blocker Output:	<p>Commands Allowed by Blocker</p> <table border="1"> <thead> <tr> <th>Count</th> <th>Commands</th> </tr> </thead> <tbody> <tr> <td>778</td> <td>C8=Read DMA</td> </tr> </tbody> </table> <p>2 commands sent, 1 commands allowed</p>	Count	Commands	778	C8=Read DMA				
Count	Commands								
778	C8=Read DMA								
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <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> <tr> <td>AM-05 HWB behavior recorded</td> <td>HWB behavior recorded</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-02 Read commands allowed	Read commands allowed	AM-03 Access Significant Information unaltered	Access Significant Information unaltered	AM-05 HWB behavior recorded	HWB behavior recorded
Assertion & Expected Result	Actual Result								
AM-02 Read commands allowed	Read commands allowed								
AM-03 Access Significant Information unaltered	Access Significant Information unaltered								
AM-05 HWB behavior recorded	HWB behavior recorded								
Analysis:	Expected results achieved								

## 4.2.7 HWB-08

<b>Test Case HWB-08 Variation hwb-08 FastBloc FE (Firewire)</b>		
Case Summary:	HWB-08 Identify access significant information unmodified by the HWB.	
Assertions Tested:	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.	
Tester Name:	kbr	
Test Date:	run start Wed Aug 2 13:52:00 2006 run finish Wed Aug 2 13:53:13 2006	
Test Configuration:	HOST: max HostToBlocker Monitor: none HostToBlocker PA: none HostToBlocker Interface: fw BlockerToDrive Monitor: none BlockerToDrive PA: none BlockerToDrive Interface: ide Run Environment: helix	
Drives:	Protected drive: BE BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)	
Blocker Output:	cmd: partab hwb-08 max kbr /dev/sdc be -all 390721968 total number of sectors	
Results:	<b>Assertion &amp; Expected Result</b>	<b>Actual Result</b>
	AM-03 Access Significant Information unaltered	Access Significant Information unaltered
Analysis:	Expected results achieved	

## 4.2.8 HWB-09

<b>Test Case HWB-09 Variation hwb-09 FastBloc FE (Firewire)</b>					
Case Summary:	HWB-09 Determine if an error on the protected drive is returned to the host.				
Assertions Tested:	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.				
Tester Name:	kbr				
Test Date:	run start Wed Aug 2 13:53:37 2006 run finish Wed Aug 2 13:55:39 2006				
Test Configuration:	HOST: max HostToBlocker Monitor: none HostToBlocker PA: none HostToBlocker Interface: fw BlockerToDrive Monitor: none BlockerToDrive PA: none BlockerToDrive Interface: ide Run Environment: helix				
Drives:	Protected drive: BE BE is a WDC WD2000JB-00KFA0 with 390721968 sectors (200 GB)				
Blocker Output:	24320/254/63 (max cyl/hd values) 24321/255/63 (number of cyl/hd) 390721968 total number of sectors cmd: diskchg hwb-09 max kbr /dev/sdc -read 490721968 0 1 Disk addr lba 490721968 C/H/S 30546/7/38 offset 0 Disk read error 0xFFFFFFFF at sector 30546/7/38				
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>AM-04 Error code returned</td> <td>Error code returned</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	AM-04 Error code returned	Error code returned
Assertion & Expected Result	Actual Result				
AM-04 Error code returned	Error code returned				
Analysis:	Expected results achieved				

## 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.

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