[MISDE]

September | 2006

Validation Testing of Guidance Software's FastBloc 2 Field Edition (FE)

MARSHALL
INFORMATION SECURITY
& DIGITAL EVIDENCE

MISDE

Marshall University
Forensic Science Center
1401 Forensic Science Dr.
Huntington, WV 25701
Phone: 304/690-4363
Fax: 304/690-4360

http://forensics.marshall.edu/MISDE

Disclaimer of Liability:

With respect to this document, neither the Marshall University Forensic Science Center nor any of its employees, makes any warranty, express or implied, including the warranty of fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed. Any mention of commercial products within the following documents is intended for information purposes only and is not intended to be used as a substitute and/or replacement for an external laboratory's own test validation. It is advised to independently verify any information prior to reliance thereon.

Redistribution Policy:

MISDE grants permission for the redistribution and use of the following posted document created by MISDE, provided that the following conditions are met.

1) Redistributions of documents, or parts of the documents, must retain the MUFSC/MISDE cover and disclaimer of liability page.
2) Neither the name of the Marshall University Forensic Science Center nor the Information Security and Digital Evidence Laboratory (MISDE) may be used to endorse or promote products derived from the following document.
3) Any reference or quote obtained from the following MISDE document must be properly annotated in the document that the reference is contained therein.

MARSHALL UNIVERSITY
FORENSIC SCIENCE CENTER
MISDE Laboratory
Official Document

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

TEST PLAN

Test Number: FastBloc2FE-01

Test Title: Validation Testing of Guidance Software's FastBloc 2 Field Edition (FE).

Test Date: 4/10/2006

Purpose and Scope:

Guidance Software's FastBloc 2 Field Edition (FE) (manufactured by Wiebetech ® L.L.C.) is a hardware write-blocking device that enables the safe viewing and acquisition of various types of source media within a Windows environment. FastBloc FE is a USB & FireWire 800 connected device that provides write-blocking capability to Parallel advanced technology attachment (PATA), Serial advanced technology attachment (SATA), 2.5" & 1.8" notebook hard disk drives, CompactFlash card media, and Personal Computer Memory Card International Association (PCMCIA) PC cards.

This test plan will test the ability of the FastBloc 2 Field Edition (FE) to allow normal write-block operation to occur to source media. This test plan will evaluate three FastaBloc 2 FE devices and will consist of twenty-one test scenarios:

Requirements:

1) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 3.5" PATA-enabled hard disk drive.

2) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 3.5" PATA-enabled hard disk drive.

3) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a SATA-enabled hard disk drive.

4) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to an SATA-enabled hard disk drive.

5) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 2.5" PATA-enabled hard disk drive.

6) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 2.5" PATA-enabled hard disk drive.

7) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of PCMCIA network card drives.

8) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a PCMCIA network card drive.

9) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 1.8" Hitachi hard disk drive.

10) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 1.8" Hitachi hard disk drive.

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

11) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of CompactFlash memory card media.

12) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to CompactFlash memory card media.

13) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 1.8" Toshiba (iPod) hard disk drive.

14) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 1.8" Toshiba (iPod) hard disk drive.

15) The FastBloc 2 Field Edition (FE) connected via USB Mini-B, should successfully recognize and allow computation of an MD5 hash calculation of a 3.5" PATA-enabled hard disk drive.

16) The FastBloc 2 Field Edition (FE) connected via USB Mini-B, should allow normal hard disk write-block operation to a 3.5" PATA-enabled hard disk drive.

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Description of Methodology:

The FastBloc 2 FE will be attached via FireWire 800 (IEEE-1394b) to a Dell Precision PWS670 w/ Microsoft Windows x64 SP1. An 18.6 GB PATA drive will be attached to the FastBloc 2 FE unit and will be powered on. After recognition of the device by Windows, an Message Digest (MD5) calculation will be performed on the drive using Guidance Software's EnCase Forensic Edition v.5.05a for Windows. Upon successful completion of the MD5 hash calculation, a file entitled "Test Document.doc" will be added to the disk via Windows explorer. The FastBloc 2 FE unit and the unit will then be powered down, restarted, and a second MD5 calculation will be performed on the disk using EnCase Forensic Edition v.5.05a for Windows to determine if a write operation was persistent or write-blocked.

An 18.6 GB SATA drive will be attached to the FastBloc 2 FE using the SATA adapter (part # ADA-SATA) and the unit will be powered on. After recognition of the device by Windows, an MD5 calculation will be performed on the drive using Guidance Software's EnCase Forensic Edition v.5.05a for Windows. Upon successful completion of the MD5 hash calculation, a file entitled "Test Document.doc" will be added to the SATA disk via Windows explorer. The FastBloc 2 FE unit and the disk will then be powered down, restarted, and a second MD5 calculation will be performed on the disk using EnCase Forensic Edition v.5.05a for Windows to determine if a write operation was persistent or write-blocked.

A 2.5" notebook PATA drive will be attached to the FastBloc 2 FE unit using the 2.5" notebook drive adapter (part # ADA-25) and will be powered on. After recognition of the device by Windows, an Message Digest (MD5) calculation will be performed on the drive using Guidance Software's EnCase Forensic Edition v.5.05a for Windows. Upon successful completion of the MD5 hash calculation, a file entitled "Test Document.doc" will be added to the disk via Windows explorer. The FastBloc 2 FE unit and the unit will then be powered down, restarted, and a second MD5 calculation will be performed on the disk using EnCase Forensic Edition v.5.05a for Windows to determine if a write operation was persistent or write-blocked.

Expected Results:

1) The Guidance Software FastBloc 2 FE will successfully calculate an MD5 hash value for supported source storage media.

2) The Guidance Software FastBloc FE write-block device will successfully prevent modification to all supported source storage media.

3) An MD5 hash performed on the source disk after the write attempt will match the original MD5 hash calculation of the source storage media.

Test Scenarios:

Test Number	Environment:	Actions:	Assigned Reqt's	Expected Results:
01-01	Parallel-ATA source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on Parallel-ATA source disk	1	MD5 Hash calculation produced.
01-02	Parallel-ATA source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc powered down and restarted	2	No modification to protected hard disk

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

01-03	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.
01-04	Serial-ATA source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on Serial-ATA source disk	3	MD5 Hash calculation produced.
01-05	Serial-ATA source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc 2 powered down and restarted	4	No modification to protected hard disk
01-06	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.
01-07	2.5” Laptop source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	5	MD5 Hash calculation produced.
01-08	2.5” Laptop source disk attached via FireWire 800; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	File added to source drive; FastBloc 2 powered down and restarted	6	No modification to protected hard disk
01-09	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.
01-10	1.8” Hitachi source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	7	MD5 Hash calculation produced.
01-11	1.8” Hitachi source disk ; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	File added to source disk; FastBloc 2 powered down and restarted.	8	No modification to protected hard disk
01-12	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

				hash calculated on disk
01-13	64 MB CompactFlash memory media; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on CompactFlash media	9	MD5 Hash calculation produced
01-14	64 MB CompactFlash memory media; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	File added to memory card media; FastBloc 2 powered down and restarted	10	No modification to protected hard disk
01-15	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on CompactFlash memory media
01-16	PCMCIA card drive; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on PCMCIA card media	11	MD5 Hash calculation produced
01-17	PCMCIA card drive; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	File added to PCMCIA card media; FastBloc 2 powered down and restarted	12	No modification to protected hard disk
01-18	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on PCMCIA card media
01-19	1.8" Toshiba (iPod) source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	13	MD5 Hash calculation produced.
01-20	1.8" Toshiba (iPod) source disk; FastBloc 2 FE attached via FireWire 800; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc 2 powered down and restarted	14	No modification to protected hard disk
01-21	N/A	Compare MD5 hash calculation values		MD5 calculation matches

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

				original MD5 hash calculated on drive.
01-22	Parallel-ATA source disk; FastBloc 2 FE attached via USB Mini-B; EnCase v.5.05a for Windows	MD5 hash calculation performed on Parallel-ATA source disk	15	MD5 Hash calculation produced.
01-23	Parallel-ATA source disk; FastBloc 2 FE attached via USB Mini-B; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc powered down and restarted	16	No modification to protected hard disk

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Test Data Description:

Test Data Set:

Examination PC:

Dell Precision PWS670
Intel Xeon 2.8GHz dual core
2.00 GB RAM
Windows XP x64 SP1
500 GB SATA HDD

Parallel-ATA disk drive

Seagate Barracuda ATA III
Model: ST320414A
Serial Number: 7eC0AS9Y
Part Number: 9R3004-301
Firmware Number: 3.05
20 Gigabyte Ultra ATA HDD

Drive Parameters:
Cylinders: 16383
Heads: 16
Sectors: 63
Addressable Sectors: 39,102,336

Installed Software:
Windows XP 32 Bit O/S w/ SP2
Microsoft Office 2003 Pro
Dell GX270 Drivers and Utilities Disk

Guidance Software FastBloc 2 FE hash value (before write attempt)
f2fe69015f701475863293a71ddda0d7

Guidance Software FastBloc 2 FE hash value (before write attempt)
f2fe69015f701475863293a71ddda0d7

Serial-ATA disk drive:

Maxtor Diamondmax 10
Model: SATA/150
Serial Number: B41AV2BH
200 Gigabyte SATA-150 HDD
18.6 GB Partition (181.4 GB unallocated/hidden)

2.5” PATA notebook disk drive
Not Tested

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

PCMCIA Card:
Not Tested

1.8” Hitachi disk drive:
Not Tested

1.8” Toshiba disk drive:
Not Tested

CompactFlash memory card:
Not Tested

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

SUMMARY REPORT

Test Number: FastBloc2FE-01

Test Title: Validation Testing of Guidance Software's FastBloc 2 Field Edition (FE).

Test Date: 4/06/2006 to 4/10/2006

Test Description:

This test documents the ability of the FastBloc 2 Field Edition (FE) to successfully prevent write-attempts to source storage media supported by the device . The test will additionally document the hardware's ability to produce consistent MD5 hash algorithm calculations of the source media.

Forensic Tool:

Title: FastBloc 2 Field Edition (FE)
Manufacturer: Guidance Software
Model Number: N/A
Serial Number: 02201000284
USB Firmware Update: 1.0.0.179

Title: FastBloc 2 Field Edition (FE)
Manufacturer: Guidance Software
Model Number: N/A
Serial Number: 02201000295
USB Firmware Update: 1.0.0.179

Title: FastBloc 2 Field Edition (FE)
Manufacturer: Guidance Software
Model Number: N/A
Serial Number: 02201000297
USB Firmware Update: 1.0.0.179

Test Scenarios:

Test Number	Environment:	Actions:	Assigned Reqt's	Expected Results:	Results:
01-01	Parallel-ATA source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on Parallel-ATA source disk	1	MD5 Hash calculation produced.	Pass
01-02	Parallel-ATA source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc powered down and restarted	2	No modification to protected hard disk	Pass
01-03	N/A	Compare MD5 hash calculation values		MD5 calculation matches	Pass

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

				original MD5 hash calculated on drive.	
01-04	Serial-ATA source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on Serial-ATA source disk	3	MD5 Hash calculation produced.	Pass
01-05	Serial-ATA source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc 2 powered down and restarted	4	No modification to protected hard disk	Pass
01-06	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.	Pass
01-07	2.5” Laptop source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	5	MD5 Hash calculation produced.	N/A
01-08	2.5” Laptop source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	File added to source drive; FastBloc 2 powered down and restarted	6	No modification to protected hard disk	N/A
01-09	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.	N/A
01-10	1.8” Hitachi source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	7	MD5 Hash calculation produced.	N/A
01-11	1.8” Hitachi source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	File added to source disk; FastBloc 2 powered down and restarted.	8	No modification to protected hard disk	N/A
01-12	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on disk	N/A
01-13	64 MB CompactFlash memory media; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on CompactFlash	9	MD5 Hash calculation produced	N/A

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

		media			
01-14	64 MB CompactFlash memory media; FastBloc 2 FE; EnCase v.5.05a for Windows	File added to memory card media; FastBloc 2 powered down and restarted	10	No modification to protected hard disk	N/A
01-15	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on CompactFlash memory media	N/A
01-16	PCMCIA card drive; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on PCMCIA card media	11	MD5 Hash calculation produced	N/A
01-17	PCMCIA card drive; FastBloc 2 FE; EnCase v.5.05a for Windows	File added to PCMCIA card media; FastBloc 2 powered down and restarted	12	No modification to protected hard disk	N/A
01-18	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on PCMCIA card media	N/A
01-19	1.8” Toshiba (iPod) source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	MD5 hash calculation performed on source drive	13	MD5 Hash calculation produced.	N/A
01-20	1.8” Toshiba (iPod) source disk; FastBloc 2 FE; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc 2 powered down and restarted	14	No modification to protected hard disk	N/A
01-21	N/A	Compare MD5 hash calculation values		MD5 calculation matches original MD5 hash calculated on drive.	N/A
01-22	Parallel-ATA source disk; FastBloc 2 FE attached via USB Mini-B; EnCase v.5.05a for	MD5 hash calculation performed on Parallel-ATA	15	MD5 Hash calculation produced.	Pass

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

	Windows	source disk			
01-23	Parallel-ATA source disk; FastBloc 2 FE attached via USB Mini-B; EnCase v.5.05a for Windows	Folder added to source drive; FastBloc powered down and restarted	16	No modification to protected hard disk	Pass

Requirements:

1) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 3.5" PATA-enabled hard disk drive.

2) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 3.5" PATA-enabled hard disk drive.

3) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a SATA-enabled hard disk drive.

4) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to an SATA-enabled hard disk drive.

5) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 2.5" PATA-enabled hard disk drive.

6) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 2.5" PATA-enabled hard disk drive.

7) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of PCMCIA network card drives.

8) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a PCMCIA network card drive.

9) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 1.8" Hitachi hard disk drive.

10) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 1.8" Hitachi hard disk drive.

11) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of CompactFlash memory card media.

12) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to CompactFlash memory card media.

13) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should successfully recognize and allow computation of an MD5 hash calculation of a 1.8" Toshiba (iPod) hard disk drive.

14) The FastBloc 2 Field Edition (FE) connected via FireWire 800 should allow normal hard disk write-block operation to a 1.8" Toshiba (iPod) hard disk drive.

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

15) The FastBloc 2 Field Edition (FE) connected via USB Mini-B, should successfully recognize and allow computation of an MD5 hash calculation of a 3.5" PATA-enabled hard disk drive.

16) The FastBloc 2 Field Edition (FE) connected via USB Mini-B, should allow normal hard disk write-block operation to a 3.5" PATA-enabled hard disk drive.

Observations:

N/A

Limitations:

Some early releases of the FastBloc 2 FE, including the aforementioned validated devices, contained no support for USB connectivity, although the device possessed a non-functional USB Mini-B port. A recent firmware update obtained from http://www.encase.com/support/downloads/hardware/FastBlocUpdateSetup.exe will rectify this issue and allow USB support of the device (see figure(s) 3.1 & 3.2).

Recommendations:

N/A

1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 1.1- PATA hash calculation before write attempt to disk

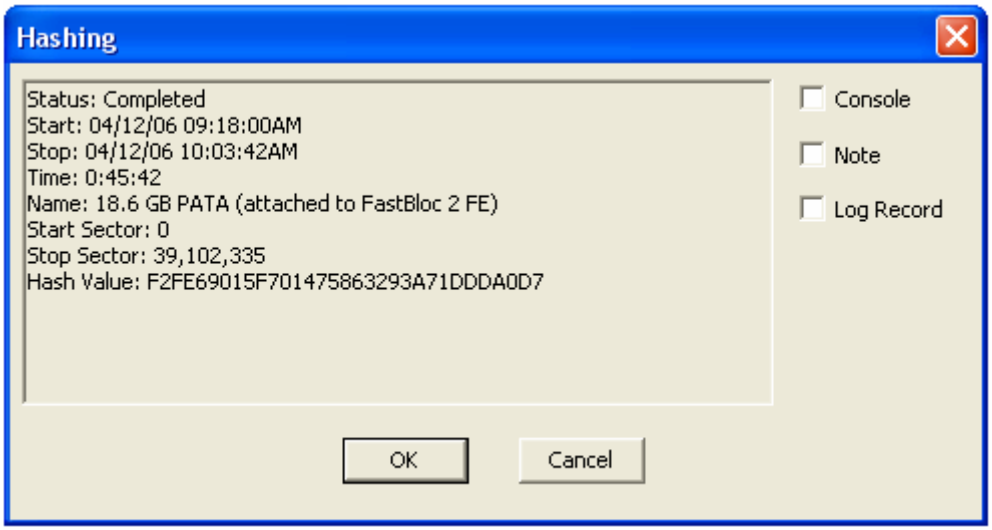
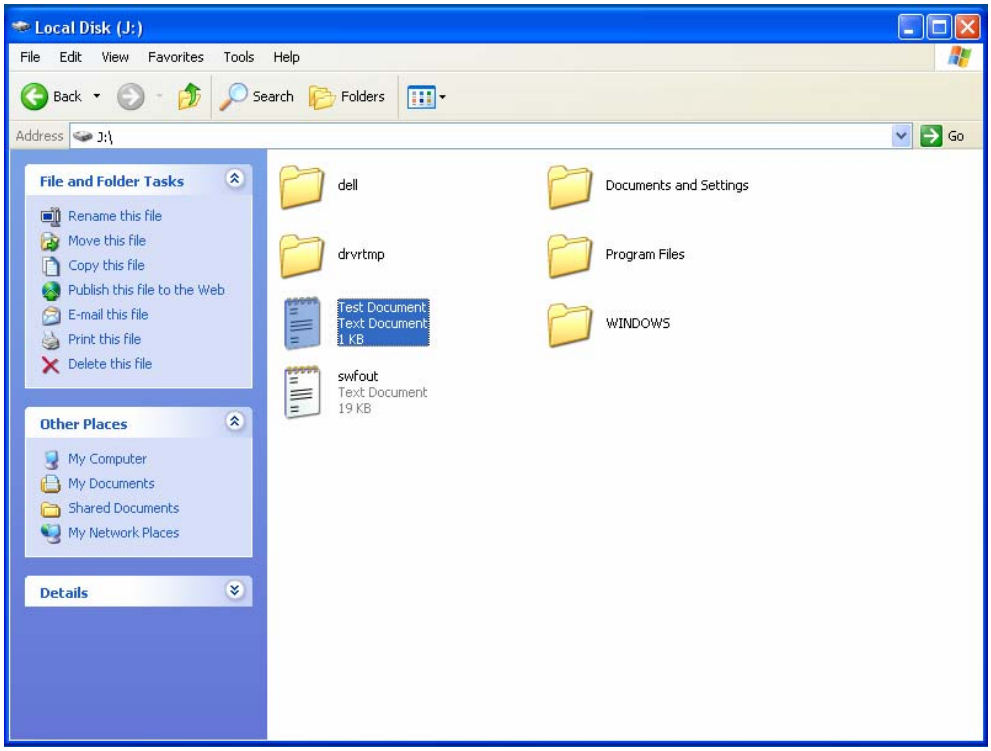


Figure 1.2- File Test Document.doc added to cache of PATA disk



1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 1.3- Disk structure of PATA disk after restart of FastBloc 2 FE

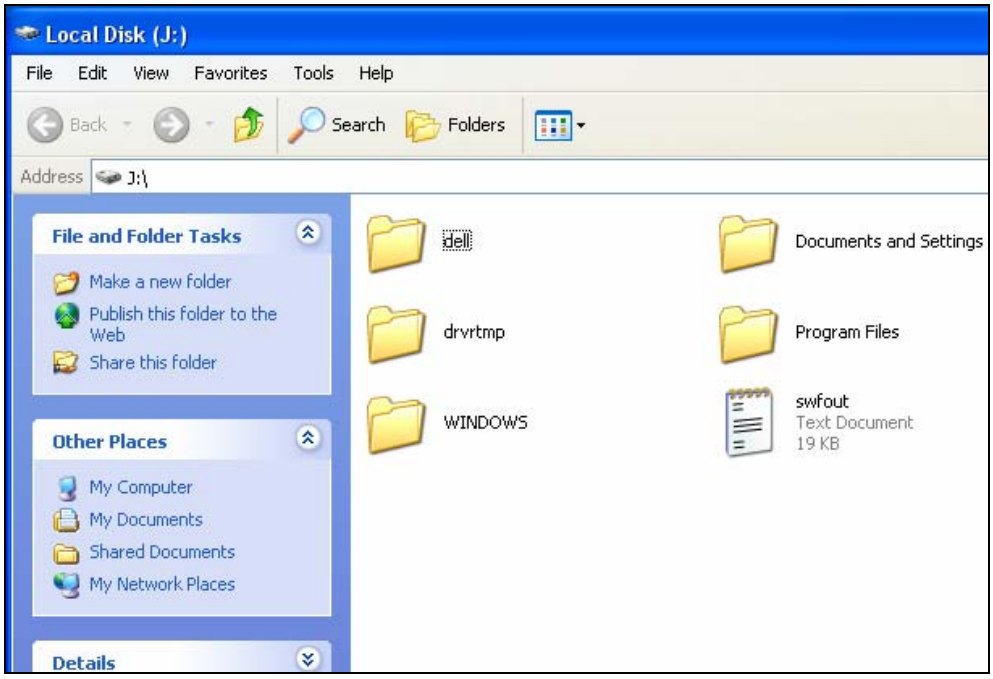
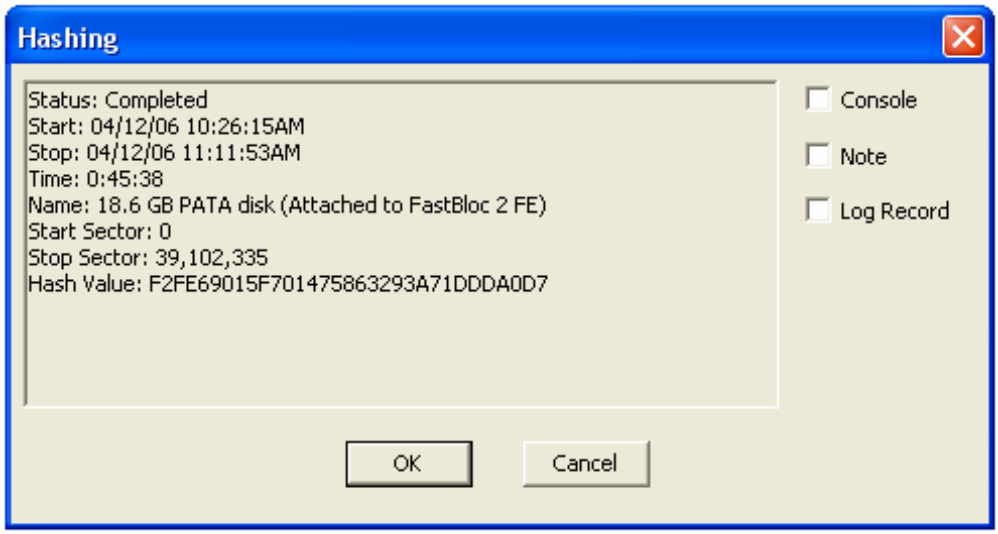


Figure 1.4- EnCase Forensic Edition v.5.05a PATA hash calculation after write attempt to disk



1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 2.1- EnCase Forensic Edition v.5.05a SATA hash calculation before write attempt to disk

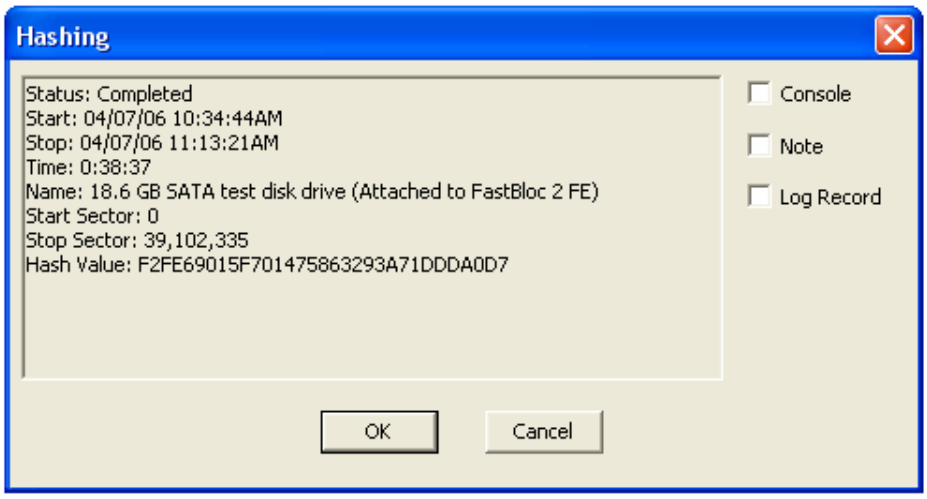
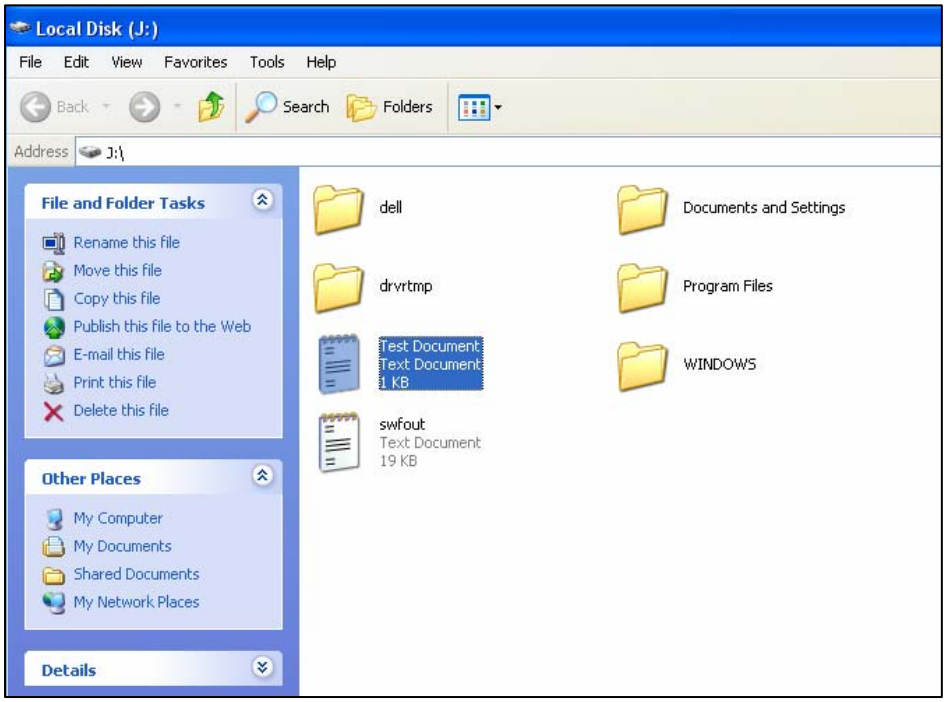


Figure 2.2- File Test Document.doc added to cache of SATA disk



1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 2.3- Disk structure of SATA disk after restart of FastBloc 2 FE

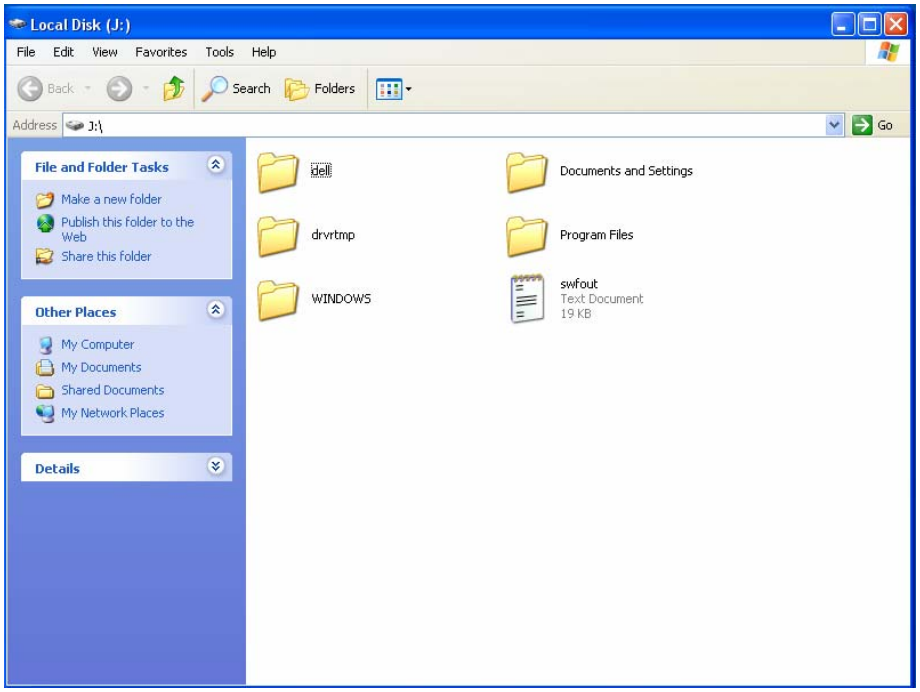
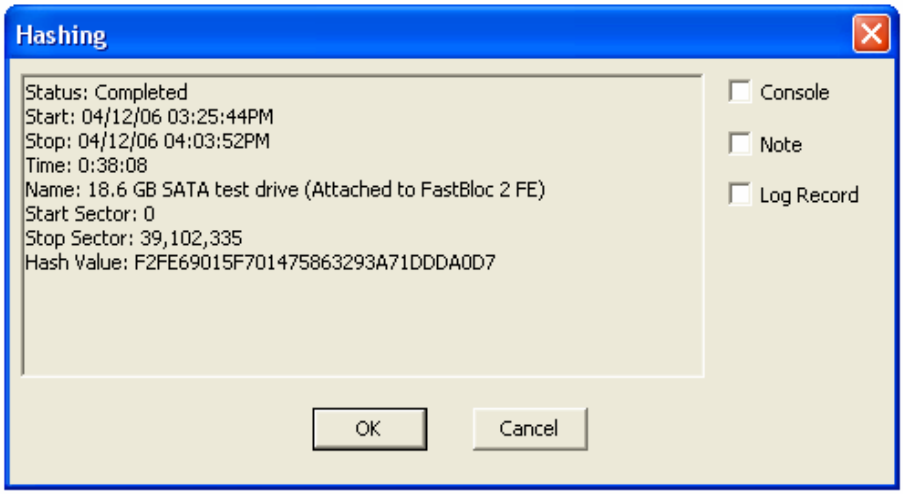


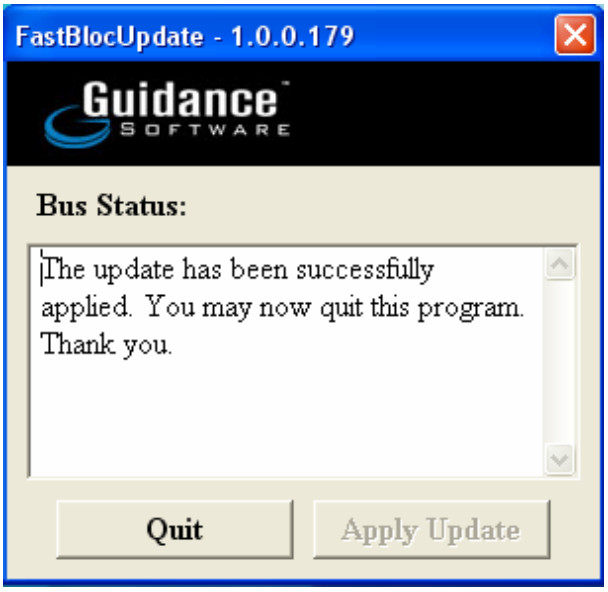
Figure 2.4- EnCase Forensic Edition v.5.05a PATA hash calculation after write attempt to disk



1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 3.1- FastBloc2 FE USB Update Driver Installation

Figure 3.2- FastBloc2 FE USB Update Driver Installation



1401 Forensic Science Drive
Huntington, WV, 25701
Telephone: 304-690-4363
Fax: 304-690-4360
http://forensics.marshall.edu

Figure 3.3- File Test Document added to cache of USB connected PATA disk.

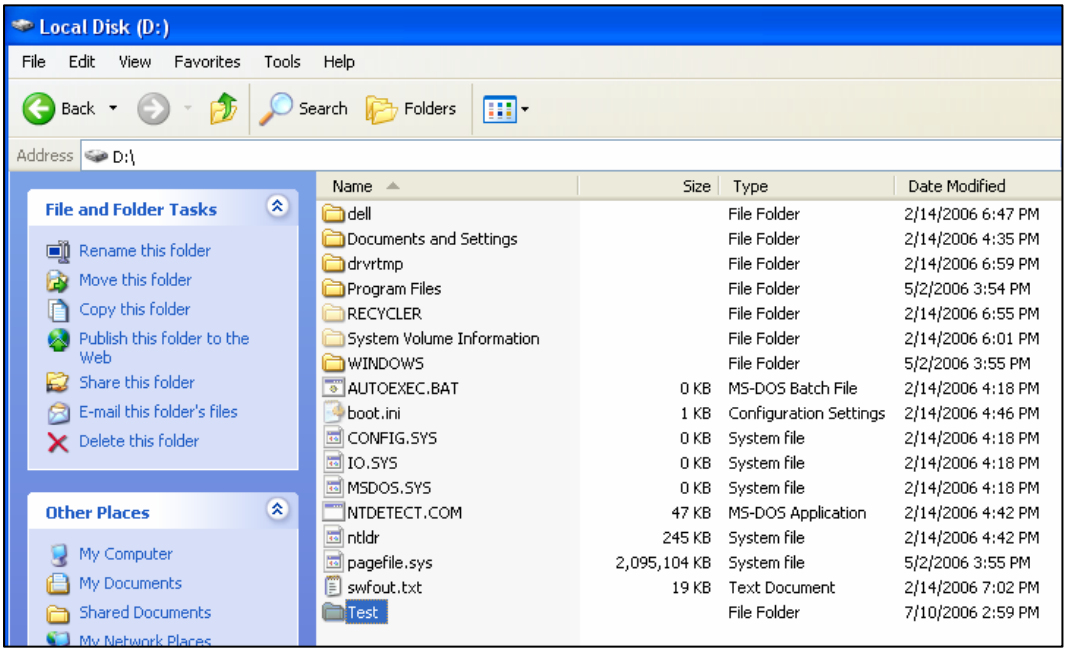


Figure 3.4- Disk structure of USB connected PATA disk after restart of FastBloc 2 FE.