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Functionality Test of the UltraBlock™ Forensic Card Reader

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TEST PLAN

Test Number: UBFCR-01

Test Title: Functionality Test of the UltraBlock™ Forensic Card Reader

Test Date: 2/27/2006

Purpose and Scope:

The UltraBlock Forensic Card Reader, manufactured by Digital Intelligence®, is designed to safely acquire and view memory card data without making inadvertent changes to the memory card data. This test will determine the ability of the UltraBlock Forensic Card Reader to sucessfully block all write attempts to memory card media. This test will consist of ten scenarios

Requirements:

1) The UltraBlock™ Forensic Card Reader should successfully recognize CompactFlash storage media in a Windows-based environment.

2) An MD5 hash value should be calculated before a write attempt to Compact Flash storage media.

3) The UltraBlock™ Read-Only Forensic Card Reader should successfully block all write attempts to CompactFlash™ storage media.

4) An MD5 hash value should be calculated after a write attempt to CompactFlash™ storage media.

5) The UltraBlock™ Forensic Card Reader should successfully recognize Memory Stick Pro™ storage media within a Windows-based environment.

6) An MD5 hash calculation should be calculated before a write attempt to the Memory Stick Pro™ storage media.

7) The UltraBlock™ Forensic card reader should successfully block all write attempts to Memory Stick Pro storage media.

8) An MD5 hash calculation should be calculated after a write attempt to the Memory Stick Pro™ storage media.

9) MD5 hash calculations made before and after a write attempt to CompactFlash™ storage media should match.

10) MD5 hash calculations made before and after a write attempt to Memory Stick Pro™ storage media should match.

11) The Logicube Desktop Write-PROtect adapter should recognize a source hard drive while connected to the secondary IDE channel of the motherboard

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12) An MD5 hash value should be calculated before a write attempt to Compact Flash™ storage media.

13) The UltraBlock™ Read-Only Forensic Card Reader should successfully block all write attempts to CompactFlash™ storage media.

14) An MD5 hash value should be calculated after a write attempt to CompactFlash™ storage media.

15) The UltraBlock™ Forensic Card Reader should successfully recognize Memory Stick Pro™ storage media within a Windows-based environment.

16) An MD5 hash calculation should be calculated before a write attempt to the Memory Stick Pro™ storage media.

17) The UltraBlock™ Forensic Card Reader should successfully block all write attempts to Memory Stick Pro storage media.

18) An MD5 hash calculation should be calculated after a write attempt to the Memory Stick Pro™ storage media.

19) MD5 hash calculations made before and after write attempts to CompactFlash™ storage media should match.

20) MD5 hash calculations made before and after write attempts to Memory Stick Pro™ storage media should match.

Description of Methodology:

The UltraBlock™ Forensic Card Reader will be connected to a PC via the system's USB 2.0 connection. A 64.0 MB Lexar® CompactFlash™ memory card will be inserted into the Forensic Card Reader in the CFC/MD expansion slot. After recognition of the device by Windows and automatic installation of the device drivers, an MD5 hash calculation of the CompactFlash™ memory card will be executed using EnCase® Forensic Edition v.5.04a for Windows. Upon completion of the MD5 hash algorithm calculation, the device will be viewed in Windows Explorer. A file entitled "Test Document.doc" will attempted be transferred to the UltraBlock™ attached CompactFlash™ (see figure 2.2). To determine a successful write-block, a subsequent MD5 hash will be calculated using Encase® Forensic Edition v.5.04a for Windows (see figure 2.3). The CompactFlash™ memory card will then be removed from the UltraBlock™ device.

A 1.0 GB Memory Stick Pro with write-block switch in the unlocked position (see figure 1.3) will be inserted into the Forensic Card Reader in the MSC/MS Pro expansion slot. After PC recognition of the device by Windows and automatic install of the device drivers, an MD5 hash calculation of the Memory Stick Pro media will be executed using Encase® Forensic Edition v.5.04a for Windows. Upon completion of the MD5 hash calculation, the device will be viewed in Windows Explorer. A file entitled "Test Document.doc" will attempted to be transferred to the UltraBlock™ attached Memory Stick Pro™ device (see figure 3.2). A second MD5 hash will then be calculated using Encase® Forensic Edition v.5.04a for Windows. The Memory Stick Pro™ media will then be removed from the UltraBlock™ device.

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Expected Results:

1) The UltraBlock™ Forensic Card Reader will successfully recognize a CompactFlash™ memory card media within a Windows-based environment.

2) The UltraBlock™ Forensic Card Reader will successfully prevent any write attempts to the CompactFlash™ memory media.

3) The UltraBlock™ Forensic Card Reader will successfully calculate an MD5 hash algorithm for the Lexar® 64 MB CompactFlash memory media.

4) The UltraBlock™ Forensic Card Reader will successfully recognize Memory Stick Pro™ media in Windows.

5) The UltraBlock™ Forensic Card Reader will successfully calculate an MD5 hash algorithm for the 1.0 GB SanDisk® Memory Stick Pro™ media.

6) MD5 hash calculations performed before and after write-attempts to the CompactFlash™ media will match.

7) MD5 hash calculations performed before and after write attempts to the Memory Stick Pro™ media will match.

Test Scenarios:

Test Number	Environment:	Actions:	Assigned Reqt's	Expected Results:
01-01	UltraBlock™ Forensic Card Reader; Lexar® 64 MB CompactFlash™ Memory Card	Connected to UltraBlock™ Device windows via USB 2.0 port	1	CompactFlash card will be recognized and drivers will be installed within Windows
01-02	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash™ memory card media; EnCase® Forensic Edition v.5.04a for Windows.	MD5 hash calculation of CompactFlash™ memory card media.	2	MD5 Hash calculation will be produced.
01-03	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash memory card media	"test document.doc" attempted transfer to CompactFlash card	3	No modification will be made to protected memory card media

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01-04	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash Memory Card; EnCase® Forensic Edition v.5.04a for Windows	MD5 hash calculation of CompactFlash memory card device	4	Second MD5 Hash calculation will be produced.
01-05	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™ memory card media	Memory Stick Pro Connected to UltraBlock™ device	5	Memory Stick Pro™ will be recognized and drivers will be installed within Windows
01-06	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™; EnCase® Forensic Edition v.5.04a for Windows	MD5 hash calculation of Memory Stick Pro™	6	MD5 Hash calculation produced.
01-07	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™ memory card media	"test document.doc" attempted transfer to CompactFlash™ card	7	No modification will be made to protected Memory Stick Pro™.
01-08	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™; EnCase® Forensic Edition v.5.04a for Windows	Second MD5 hash calculation performed on Memory Stick Pro™.	8	Second MD5 hash calculation produced.
01-09	N/A	Compare MD5 hash calculation values	9	MD5 calculation will match original MD5 hash calculated on CompactFlash™ memory card media.
01-10	N/A	Compare MD5 hash calculation values	10	MD5 calculation will match original MD5 hash calculated on Memory Stick Pro™ media.

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Test Data Description:

Media #1

Title:	CompactFlash™
Manufacturer:	Lexar® Media
Model Number:	P/N 2250, Rev A.
Capacity:	64.0 MB
Serial Number:	3816064AC5102E2BA

MD5 hash value (before write attempt):
CAFD1C7AB299CFCA6B11F85A9AC95AAE

MD5 hash value (after write attempt):
CAFD1C7AB299CFCA6B11F85A9AC95AAE

Media #2

Title:	Memory Stick Pro™ (Magic Gate)
Manufacturer:	SanDisk®
Model Number:	SDMSV-1024
Capacity:	1.0 GB
Serial Number:	BB0507BF

MD5 hash value (before write attempt):
15C39588AB3F4743BA29C57B7F434FF8

MD5 hash value (after write attempt):
15C39588AB3F4743BA29C57B7F434FF8

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SUMMARY REPORT

Test Number: UBFCR-01

Test Title: Functionality Test of the UltraBlock™ Forensic Card Reader

Test Date: 2/27/2006

Test Description:

This test documents the results of the functionality of the UltraBlock™ Read-Only Forensic Card Reader. The analysis consists of ten scenarios:

Forensic Tool:

Title: UltraBlock™ Forensic Card Reader
Manufacturer: Digital Intelligence®
Model Number: USB2.0-CRW12-BAYX
Serial Number: 0533019739

Test Results:

Test Number	Environment:	Actions:	Assigned Reqt's	Expected Results:	Results:
01-01	UltraBlock™ Forensic Card Reader; Lexar® 64 MB CompactFlash™ memory card media	Connected to UltraBlock Device windows via USB 2.0 port	1	CompactFlash card will be recognized and drivers will be installed within Windows	Pass
01-02	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash™ memory card media; EnCase® Forensic Edition v.5.04a for Windows.	MD5 hash calculation of CompactFlash™ memory card media.	2	MD5 Hash calculation will be produced.	Pass
01-03	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash memory card media	"test document.doc" attempted transfer to CompactFlash card	3	No modification will be made to protected memory card media	Pass

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01-04	UltraBlock™ Forensic Card Reader; 64 MB CompactFlash™ memory card media; EnCase® Forensic Edition v.5.04a for Windows	MD5 hash calculation of CompactFlash™ memory card media	4	Second MD5 Hash calculation will be produced.	Pass
01-05	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™ memory card media	Memory Stick Pro Connected to UltraBlock™ device	5	Memory Stick Pro™ will be recognized and drivers will be installed within Windows	Pass
01-06	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™; EnCase® Forensic Edition v.5.04a for Windows	MD5 hash calculation of Memory Stick Pro™	6	MD5 Hash calculation produced.	Pass
01-07	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™ memory card media	"test document.doc" attempted transfer to CompactFlash™ card	7	No modification will be made to protected Memory Stick Pro™.	Pass
01-08	UltraBlock™ Forensic Card Reader; 1 GB Memory Stick Pro™; EnCase® Forensic Edition v.5.04a for Windows	Second MD5 hash calculation performed on Memory Stick Pro™.	8	Second MD5 hash calculation produced.	Pass
01-09	N/A	Compare MD5 hash calculation values	9	MD5 calculation will match original MD5 hash calculated on CompactFlash™ Card.	Pass
01-10	N/A	Compare MD5 hash calculation values	10	MD5 calculation will match original MD5 hash calculated on Memory Stick Pro™ media.	Pass

Requirements:

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1) The UltraBlock™ Forensic Card Reader should successfully recognize CompactFlash storage media in a Windows-based environment.

2) An MD5 hash value should be calculated before a write attempt to Compact Flash storage media.

3) The UltraBlock™ Read-Only Forensic Card Reader should successfully block all write attempts to CompactFlash™ storage media.

4) An MD5 hash value should be calculated after a write attempt to CompactFlash™ storage media.

5) The UltraBlock™ Forensic Card Reader should successfully recognize Memory Stick Pro™ storage media within a Windows-based environment.

6) An MD5 hash calculation should be calculated before a write attempt to the Memory Stick Pro™ storage media.

7) The UltraBlock™ Forensic card reader should successfully block all write attempts to Memory Stick Pro storage media.

8) An MD5 hash calculation should be calculated after a write attempt to the Memory Stick Pro™ storage media.

9) MD5 hash calculations made before and after a write attempt to CompactFlash™ storage media should match.

10) MD5 hash calculations made before and after a write attempt to Memory Stick Pro™ storage media should match.

Observations:

The Memory Stick Pro media is equipped with a write-block switch (see figure 1.3). During the validation test, this switch was left in the default unlocked position in order to test the functionality of the UltraBlock™ Forensic Card Reader.

During testing of the UltraBlock™ Card Reader, it was discovered that the device was capable of recognizing and viewing multiple types of media (e.g. CompactFlash and Memory Stick Pro) simultaneously.

Limitations:

N/A

Recommendations:

N/A

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Figure 1.1- Digital Intelligence® UltraBlock™ Forensic Card Reader

Figure 1.2 Storage media used for analysis.

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Figure 1.3 Shown here is the write-block switch of the SanDisk Memory Stick Pro™ in the un-locked position

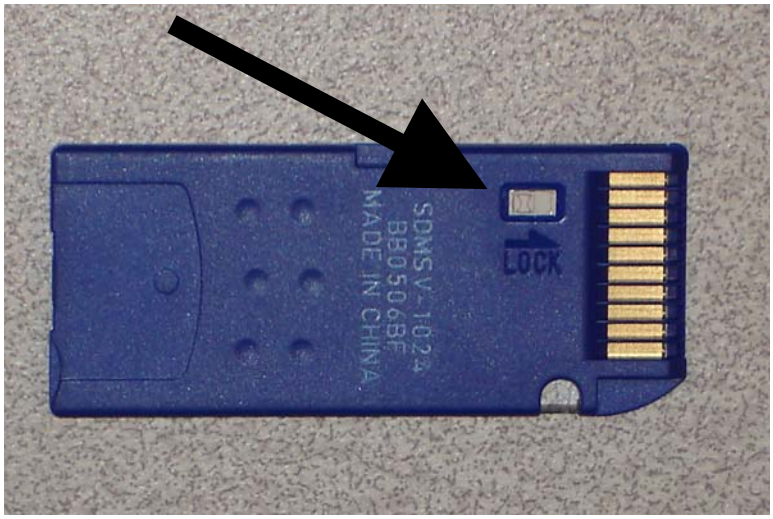

Figure 2.1 EnCase® v.5.04a Hash statistics of the Lexar 64 MB CompactFlash™ media before a write operation was attempted.

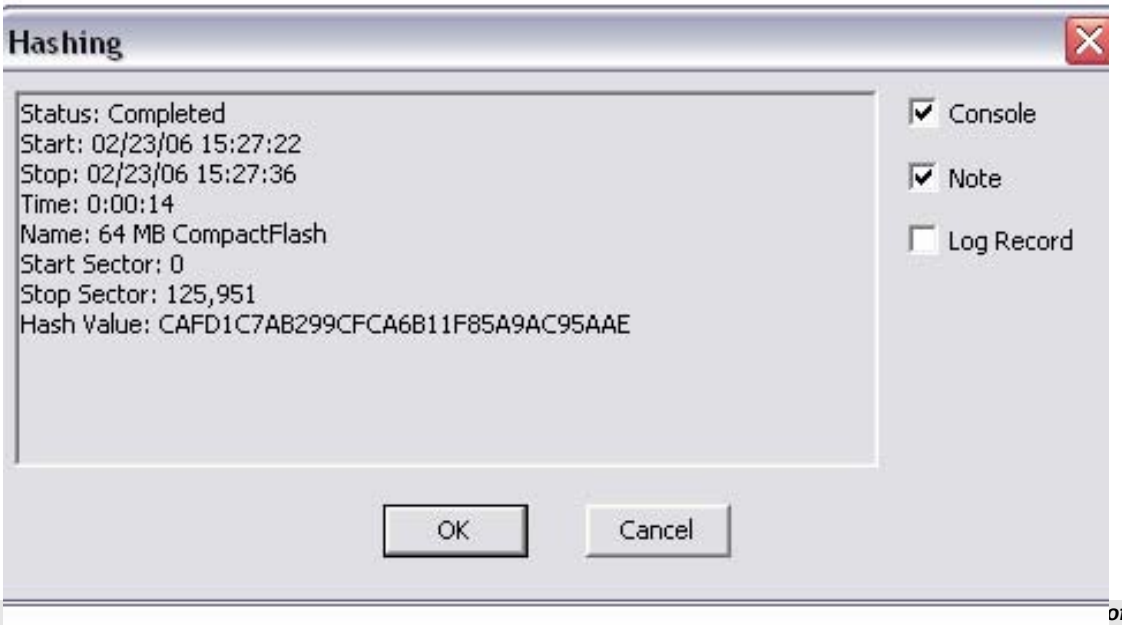

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Figure 2.2 The results of the write attempt operation to the Lexar CompactFlash™ media attached to the UltraBlock™ Forensic Card Reader.

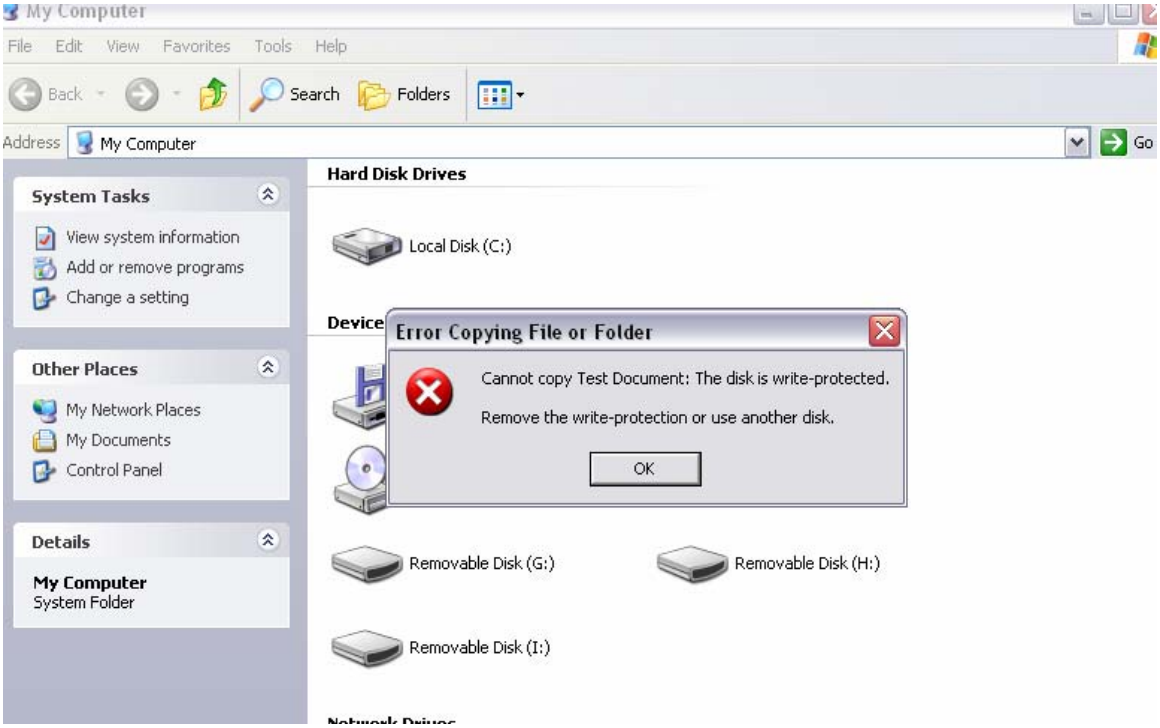

Figure 2.3 EnCase® Forensic Edition v.5.04a hash statistics of the Lexar CompactFlash™ media after a write operation was attempted.

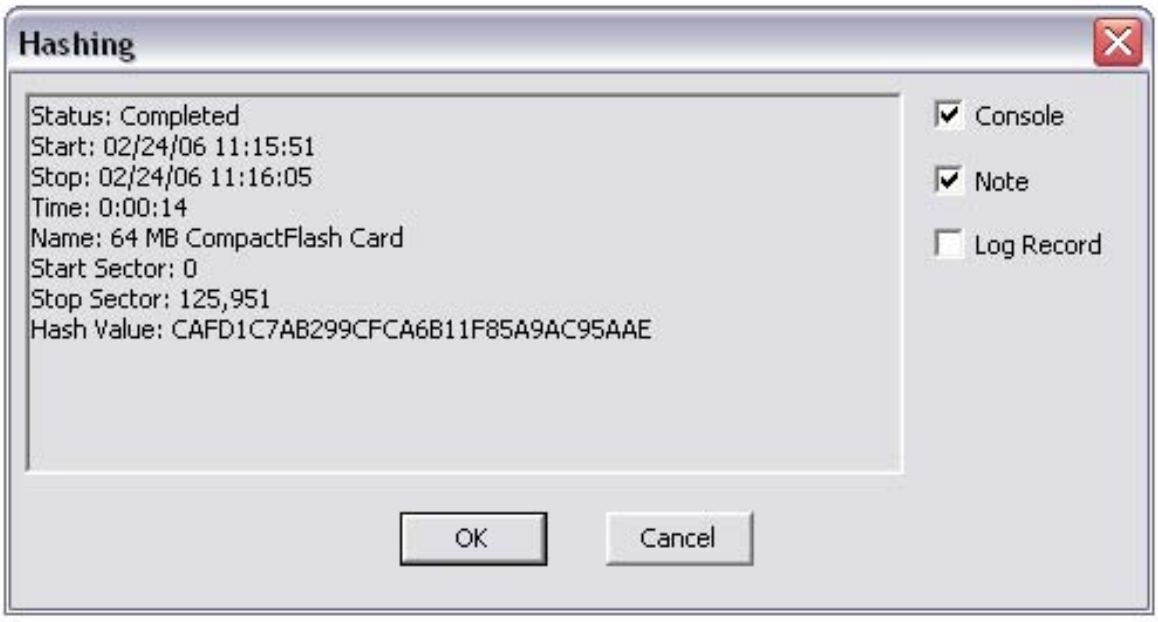

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Figure 3.1 EnCase Forensic Edition v.5.04a sash statistics of Memory Stick Pro™ before a write operation was attempted.

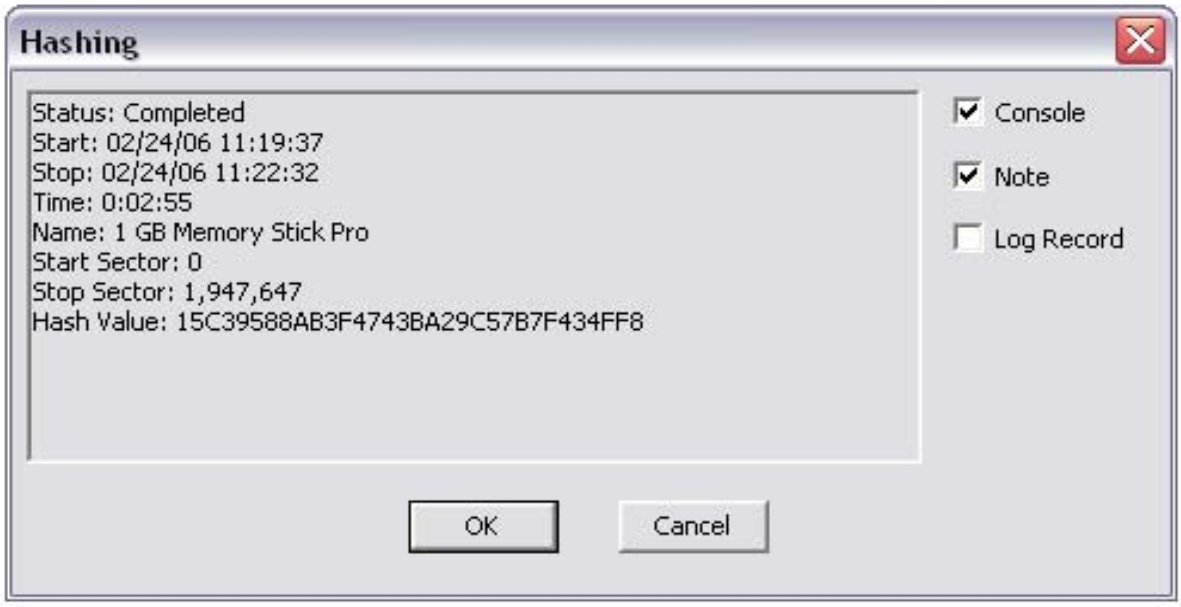

Figure 3.2 Write attempt to Memory Stick Pro™ device attached to UltraBlock™ Forensic Card Reader.

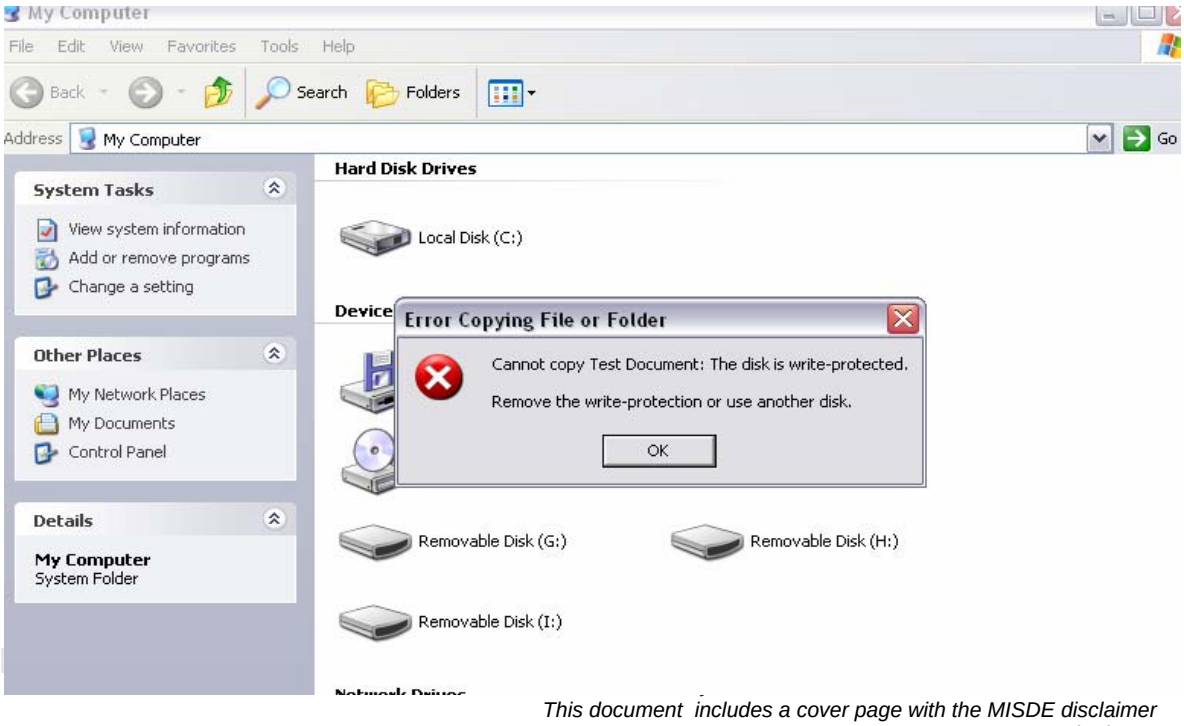

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Figure 3.3 Hash statistics of the SanDisk Memory Stick™ Pro after a write operation was attempted