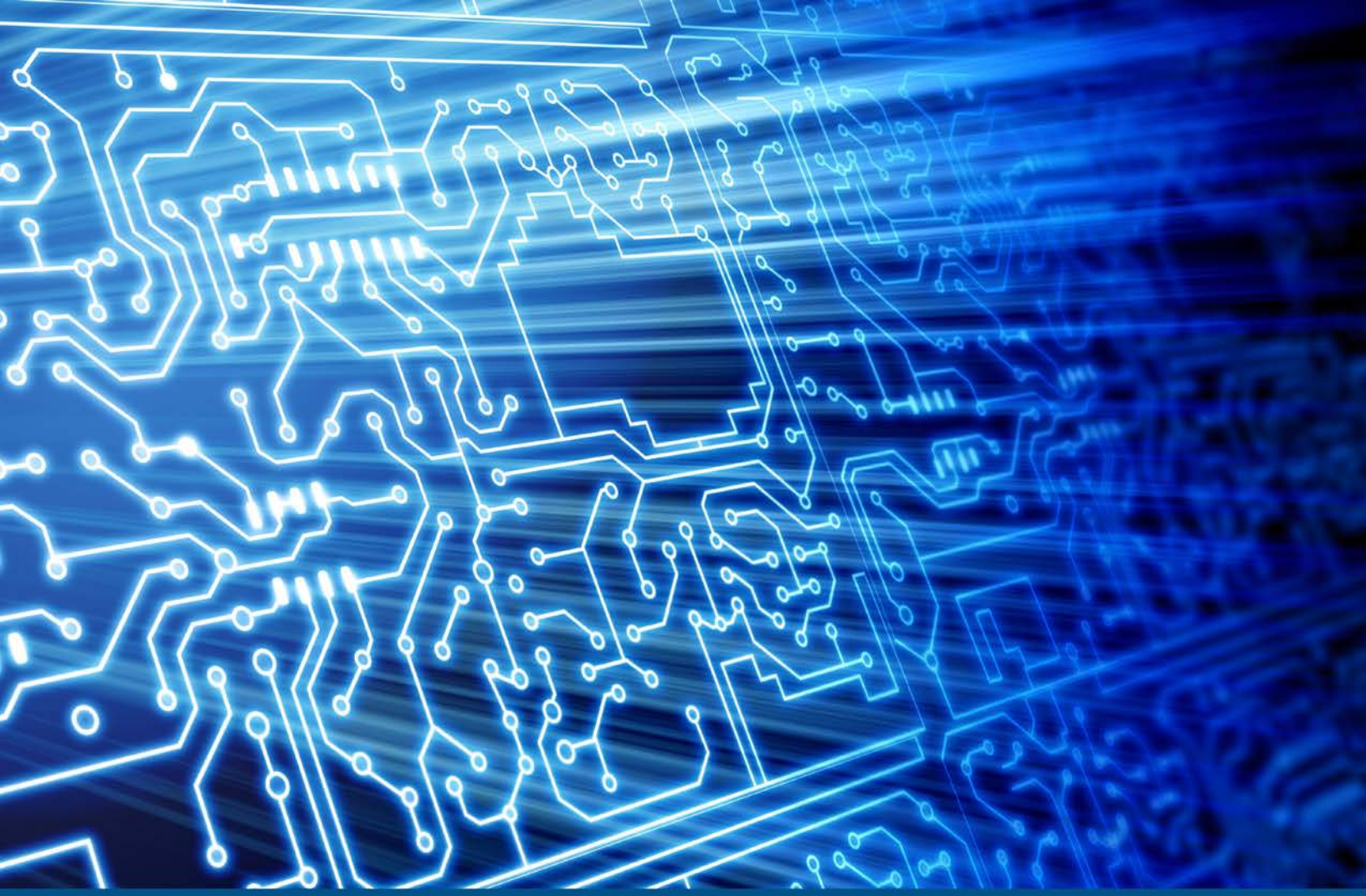

Test Results for Write-Protected Drive: Apricorn Padlock DT Firmware Version 0510

Federated Testing Suite for Hardware Write Blocking

May 2020

Homeland Security

Science and Technology

This report was prepared for the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) by the Office of Law Enforcement Standards of the National Institute of Standards and Technology.

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Contents

Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the Department of Homeland Security Science and Technology Directorate (DHS S&T), the National Institute of Justice (NIJ), and the National Institute of Standards and Technology (NIST) Special Programs Office 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, U.S. Internal Revenue Service Criminal Investigation Division Electronic Crimes Program, and the U.S. Department of Homeland Security's Bureau of Immigration and Customs Enforcement, U.S. Customs and Border Protection 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. The CFTT approach to testing computer forensics tools is based on well-recognized methodologies for conformance and quality testing. Interested parties in the computer forensics community can review and comment on the specifications and test methods posted on the CFTT Web site (https://www.cftt.nist.gov/).

This document reports the results from testing the read-only function of the Apricorn Padlock DT device firmware version 0510 using the CFTT Federated Testing Test Suite for Hardware Write Blocking, Version 3.1.

Federated Testing is an expansion of the CFTT program to provide forensic investigators and labs with test materials for tool testing and to support shared test reports. The goal of Federated Testing is to help forensic investigators to test the tools that they use in their labs and to enable sharing of tool test results. CFTT's Federated Testing Forensic Tool Testing Environment and included test suites can be downloaded from https://www.cftt.nist.gov/federated-testing.html and used to test forensic tools. The results can be optionally shared with CFTT, reviewed by CFTT staff, and then shared with the community.

Test results from this and other tools can be found on DHS's computer forensics web page, https://www.dhs.gov/science-and-technology/nist-cftt-reports.

How to Read This Report

This report is organized into the following sections:

1. Tested Device Description. The device name, version and vendor information are listed.
2. Testing Organization. Contact information and approvals.
3. Results Summary. This section identifies any significant anomalies observed in the test runs. This section provides a narrative of key findings identifying where the device meets expectations and provides a summary of any ways the device did not meet expectations. The section also provides any observations of interest about the device or about testing the device including any observed limitations on device use.
4. Test Environment. Description of hardware and software used in device testing.
5. Test Result Details by Case. Automatically generated test results that identify anomalies.
6. Appendix: Additional details. Additional details for each test case.

Federated Testing Test Results for Write-Protected Drive: Apricorn Padlock DT

1 Device Description

Device Name: Padlock DT
Firmware Version: 0510

Manufacturer Contact:

Manufacturer:	Apricorn
Address:	12191 Kirkham Road Poway, CA 92064
Tel:	(800) 458-5448
WWW:	https://www.apricorn.com

2 Testing Organization

Organization conducting test: Apricorn
Contact: Kevin Su
Report date: 8-22-2019
Authored by: Mark D.

3 Results Summary

The tested device performed as expected. Data on the device was unchanged by the attempted writes.

4 Test Environment

Hardware: tests were run using a computer with an ASUS ROG STRIX B450-F Gaming motherboard, AMD Ryzen 5 2600 Six Core CPU, and 16 GB DDR4 Corsair memory.

Padlock DT, firmware version 0510. Put the drive in read-only mode before testing to repeat the tests.

5 Test Result Details by Case

This section presents test results grouped by case.

5.1 FT-HWB-USB

5.1.1 Test Case Description

Test a USB key or USB portable drive's ability to write-protect when Read-Only mode is enabled. Test the ability of the USB key or USB portable drive to block write commands from the ATA and SCSI command sets issued from a test computer.

5.1.2 Test Drive Description

Manufacturer, model & size of the test drive used for this test: Padlock DT with 16TB capacity (ADT-3PL256-xxxx) configured in read-only mode.

5.1.3 Test Evaluation Criteria

The number of 'writes not blocked' should be 0.

5.1.4 Test Case Results

The following table presents results for the test case.

Test Results for FT-HWB-USB		
Computer to Drive Connection	**Write Commands Sent**	**Writes Not Blocked**
USB 3	36	0

5.1.5 Case Summary

Test drive unchanged.

6 Appendix: Additional Details

6.1 FT-HWB-USB

6.1.1 USB 3

```
/usr/lib/cgi-bin/test-hwb Thu Aug 22 08:58:32 2019
@(#) test-hwb.c Linux Version 1.3 created 05/17/18 at 15:05:48
compiled May 17 2018 15:06:05 with gcc Version 5.4.0 20160609
@(#) wrapper.c Linux Version 1.5 support lib created 08/03/17 at 13:05:44
@(#) ataraw.c Linux Version 1.3 support lib created 08/03/17 at 13:05:44
@(#) ataraw.h Linux Version 1.3 created 08/03/17 at 13:06:12
cmd: /usr/lib/cgi-bin/test-hwb -bh -p /media/cftt/FT-LOGS/FT-HWB-usb/ Mark_D.
AMD-5 FT-HWB-usb usb3 usb /dev/sdc
operator: Mark_D.
host: AMD-5
test case: FT-HWB-usb
connection type: usb3
drive/media type: usb
device: /dev/sdc
device type (ATA or SCSI - /usr/lib/cgi-bin/test-hwb tries to guess):
       SCSI

Opcode  Command Name                  Status         Lba/Sector     Result
30h     (ATA) WRITE SECTOR(S)         Sent           12288          Unchanged
CAh     (ATA) WRITE DMA               Sent           51712          Unchanged
CCh     (ATA) WRITE DMA QUEUED        Sent           52224          Unchanged
C5h     (ATA) WRITE MULTIPLE          Sent           50432          Unchanged
31h     (ATA) WRITE SECTOR(S)         Sent           12544          Unchanged
        w/o retries
CBh     (ATA) WRITE DMA w/o retries   Sent           51968          Unchanged
3Ch     (ATA) WRITE VERIFY            Sent           15360          Unchanged
34h     (ATA) WRITE SECTOR(S) EXT     Sent           13312          Unchanged
39h     (ATA) WRITE MULTIPLE EXT      Sent           14592          Unchanged
CEh     (ATA) WRITE MULTIPLE FUA EXT  Sent           52736          Unchanged
3Bh     (ATA) WRITE STREAM EXT        Sent           15104          Unchanged
35h     (ATA) WRITE DMA EXT           Sent           13568          Unchanged
3Dh     (ATA) WRITE DMA FUA EXT       Sent           15616          Unchanged
36h     (ATA) WRITE DMA QUEUED EXT    Sent           13824          Unchanged
3Eh     (ATA) WRITE DMA QUEUED FUA EXTSent           15872          Unchanged
3Ah     (ATA) WRITE STREAM DMA EXT    Sent           14848          Unchanged
38h     (ATA) CFA WRITE SECTORS       Sent           14336          Unchanged
        W/O ERASE
CDh     (ATA) CFA WRITE MULTIPLE      Sent           52480          Unchanged
        W/O ERASE
C0h     (ATA) CFA ERASE SECTORS       Sent           49152          Unchanged
0Ah     (SCSI) WRITE 6                Sent           2576           Unchanged
2Ah     (SCSI) WRITE 10               Sent           10768          Unchanged
AAh     (SCSI) WRITE 12               Sent           43536          Unchanged
8Ah     (SCSI) WRITE 16               Sent           35344          Unchanged
7Fh     (SCSI) WRITE 32               Sent           32528          Unchanged
2Eh     (SCSI) WRITE AND VERIFY 10    Sent           11792          Unchanged
AEh     (SCSI) WRITE AND VERIFY 12    Sent           44560          Unchanged
8Eh     (SCSI) WRITE AND VERIFY 16    Sent           36368          Unchanged
7Fh     (SCSI) WRITE AND VERIFY 32    Sent           32529          Unchanged
41h     (SCSI) WRITE SAME 10          Sent           16656          Unchanged
93h     (SCSI) WRITE SAME 16          Sent           37648          Unchanged
```

```
7Fh     (SCSI) WRITE SAME 32          Sent          32530          Unchanged
3Fh     (SCSI) WRITE LONG 10          Sent          16144          Unchanged
9Fh     (SCSI) WRITE LONG 16          Sent          40720          Unchanged
32h     (ATA) WRITE LONG              Sent          12800          Unchanged
33h     (ATA) WRITE LONG w/o retries  Sent          13056          Unchanged
45h     (ATA) WRITE UNCORRECTABLE EXT Sent          17664          Unchanged

36 writes sent, 0 write(s) not blocked, 0 write commands unsupported.

RESULTS: test drive unchanged

run start Thu Aug 22 08:58:32 2019
run finish Thu Aug 22 08:58:32 2019
elapsed time 0:0:0
Normal exit

Status Key:
Sent - the ioctl used to send this command returned without error and the ATA
error bit (if applicable) was not set.
Not supported - the ioctl used to send this command return with an error
status or the command completed with the ATA error bit set.
Test terminated - the test was terminated for dangerous commands because 3 or
more previous commands were not blocked.

Result Key:
Unchanged - no changes to the test drive were detected.
Not Blocked - sending this command resulted in a change to the test drive.
This command was NOT blocked!
n/a - Not applicable.
```

6.2 Test Setup & Analysis Tool Versions

Version numbers of tools used are listed.

Setup & Analysis Tool Versions
test-hwb.c Linux Version 1.3 created 05/17/18 at 15:05:48

Tool: @(#) ft_hwb_prt_test_report.py Version 1.2 created 04/26/18 at 10:11:19
OS: Linux Version 4.13.0-37-generic
Federated Testing Version 3.1, released 5/25/2018