Products Claims Testing
Claims Test ADPC0145
Redkey USB

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Distribution: Confidential

DISCLAIMER

The Product Claims Test is presented as the outcome of a specific test ran in laboratory environment under controlled conditions. Use of this certified product for the purpose of sanitizing data from devices tested needs to be done so after a risk assessment process. ADISA reserves the right to review the validity of this award upon changes in threat landscape.

LIABILITY

ADISA accepts no liability for any claims resulting from the use of the product tested.

REVISION HISTORY

27.06.2022 Revision 1.0 issued to Gareth Owen

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1.0 Executive Summary

This is a preliminary report detailing the findings in relation to the execution of the ADISA Testing Methodology on Claims Test ADPC0145 submitted by Gareth Owen of Redkey USB in May 2022.

The claims test was carried out in accordance with ADISA Claims Testing (ACT) v1.0 and supporting document ADISA Testing Methodology v1.8, both of which are available from ADISA.

The claim made for the drive was:

> *"Redkey USB software called V4, when used in accordance with User Manual revision 4.1 and using the (NIP) NIST 800-88 Purge algorithm, will overwrite all user data on the media samples within this test to protect from a forensic attack aligned to test LEVEL 2 of the ADISA Threat Matrix." ADPC0145*

Two devices were submitted as part of this test, and these are listed below:

Device	***Test Level***
Western Digital 500GB HDD Model: WD5000BPKX	1 and 2
Ortial 128Gb SSD Model: OC-150-128	1 and 2

After testing it is confirmed that the Redkey USB **claim is true** for the devices tested up to Test Level 1 results. Those devices are:

- Western Digital 500GB HDD Model: WD5000BPKX
- Ortial 128GB SSD Model OC-150-128

After testing it is confirmed that the Redkey USB **claim is true** for the devices tested up to Test Level 2 results. Those devices are:

- Western Digital 500GB Model: WD5000BPKX
- Ortial 128GB SSD Model OC-150-128

2.0 Test Level 1 Testing Solid State and Magnetic Hard Drives

2.1 Methodology.

This test phase is designed to evaluate the claim made by recreating an attack by a threat adversary utilising standard COTS forensic tools and techniques.

For each computer hard drive device, the following methodology is performed:

1. The device is connected to a target PC and place in a stable state.
2. The applicant software was configured in accordance with the manufacturer's instructions.
3. Structured data, the string "ADISA", was written to every logical block address on the hard drive.
4. The device was then imaged using standard imaging techniques to create a base-line forensic image.
5. The device was then erased using the applicant's software in accordance with the manufacturer's instructions.
6. The device was then analysed use using the following tools to create a second forensic image:
    a. Standard commercial tools and techniques such as Access Data/FTK, Forensic Explorer and Encase.
7. The two forensic images (Stage 4 and Stage 6) were then compared and contrasted to ensure that all structured data had been removed.
    a. For this test, there is no tolerance for remnant structured data and the result is a straight Pass or Fail.

2.2 Test Results.

Test Level 1 Summary Results

Test Level 1 replicated an attack on these devices being made by an aggressor with capabilities outlined below.

Risk Level	Threat Actor and Compromise Methods	Test Level
1 (Low)	Casual or opportunistic threat actor only able to mount high-level non-invasive and non-destructive software attacks utilising freeware, OS tools and COTS products. Commercial data recovery organisation able to mount non-invasive and non-destructive software attacks and hardware attacks.	1

The Results of Test Level 1.

Hard Drive/Model	***Result***
Western Digital 500GB Model: WD5000BPKX	PASS
Ortial 128Gb SSD Model: OC-150-128	PASS

Pass means that the software Redkey USB v4 mitigates the threat posed by the Threat Actors holding the capabilities outlined by Test Level 1 on the tested devices and the claim made can be confirmed.

3.0 Test Level 2 Testing Solid State Drive

3.1 Methodology.

This test phase is designed to evaluate the claim made by recreating an attack by a threat adversary utilising standard intrusive/destructive testing tools designed to read data directly off the device at the platter/chip level.

For each computer hard drive device, the following methodology is performed:

1. The device is connected to a target PC and place in a stable state.
2. The applicant software was configured in accordance with the manufacturer's instructions.
3. If present on the test device the DCO and HPA are removed.
4. Structured data, the string "ADISA", was written to every logical block address on the hard drive.
5. The device was then imaged using standard imaging techniques to create a base-line forensic image.
6. The device was then erased using the applicant's software in accordance with the manufacturer's instructions.
7. The device was then analysed use the following tools and techniques to create a series of forensic images that are compared and contrasted with the base-line forensic image to ensure that all structured data has been removed. For this test, there is no tolerance for remnant structured data and the result is a straight Pass or Fail.
    a. Software based forensic tools/techniques such as:
        i. Standard commercial tools and techniques such as Access Data/FTK, Forensic Explorer and Encase;
        ii. State of the art data recovery tools such as PC3000 SSD, PC3000 UDMA/SAS;
        iii. Customer designed data recovery software.
    b. Hardware/Chip based forensic tools/techniques such as:
        i. Flash/NAND TSOP/BGA chip readers;
        ii. State of the art data recovery tools such as PC3000 FLASH, PC3000 SSD and Rusolut;
        iii. Hardware debugging techniques such as JTAG, I3C and SPI;
        iv. Customer designed data recovery software/hardware.

3.2 Test Results.

Test Level 2 Summary Results

Test Level 2 replicated an attack on these devices being made by an aggressor with capabilities outlined below.

Risk Level	Threat Actor and Compromise Methods	Test Level
2 (Medium)	Commercial computer forensics organisation able to mount both non-invasive/non-destructive and invasive/non-destructive software and hardware attack, utilising COTS products. Commercial data recovery and computer forensics organisation able to mount both non-invasive/non-destructive and invasive/ non-destructive software and hardware attack, utilising both COTS and bespoke utilities.	2

The Results of Test Level 2.

Hard Drive/Model		*Result*
Ortial 128Gb SSD	Model: OC-150-128	PASS

Pass means that the software Redkey USB v4 mitigates the threat posed by the Threat Actors holding the capabilities outlined by Test Level 2 on the tested devices and the claim made can be confirmed.

4.0 Test Level 2 Testing Magnetic Hard Drive

4.1 Methodology.

This test phase is designed to evaluate the claim made by recreating an attack by a threat adversary utilising standard intrusive/destructive testing tools designed to read data directly off the device at the platter/chip level.

For each computer hard drive device, the following methodology is performed:

1. The device is connected to a target PC and place in a stable state.
2. The applicant software was configured in accordance with the manufacturer's instructions.
3. If present on the test device the DCO and HPA are removed.
4. Structured data, the string "ADISA", was written to every logical block address on the hard drive.
5. The device was then imaged using standard imaging techniques to create a base-line forensic image.
6. The device was then erased using the applicant's software in accordance with the manufacturer's instructions.
7. The device was then analysed use the following tools and techniques to create a series of forensic images that are compared and contrasted with the base-line forensic image to ensure that all structured data has been removed. For this test, there is no tolerance for remnant structured data and the result is a straight Pass or Fail.
    a. Software based forensic tools/techniques such as:
        i. Standard commercial tools and techniques such as Access Data/FTK, Forensic Explorer and Encase;
        ii. State of the art data recovery tools such as PC3000 UDMA/SAS;
        iii. Hardware debugging techniques such as JTAG, I3C and SPI;
        iv. Customer designed data recovery software.

4.2 Test Results.

Test Level 2 Summary Results

Test Level 2 replicated an attack on these devices being made by an aggressor with capabilities outlined below.

Risk Level	Threat Actor and Compromise Methods	Test Level
2 (Medium)	Commercial computer forensics organisation able to mount both non-invasive/non-destructive and invasive/non-destructive software and hardware attack, utilising COTS products. Commercial data recovery and computer forensics organisation able to mount both non-invasive/non-destructive and invasive/ non-destructive software and hardware attack, utilising both COTS and bespoke utilities.	2

The Results of Test Level 2.

Hard Drive/Model	*Result*
Western Digital 500GB Model: WD5000BPKX	PASS

Pass means that the software Redkey USB v4 mitigates the threat posed by the Threat Actors holding the capabilities outlined by Test Level 2 on the tested devices and the claim made can be confirmed.

5.0 Summary and Conclusions.

Claims Test Result: **Pass on all devices tested.**

The two devices passed the claims test as all-forensic data recovery techniques up to and including ADISA Test Level 1 and 2 failed to recover any data. The software tested was the Redkey USB v4.

Claims Test Carried Out By: Godfred Badu

Test Facility: ADISA Research Centre

Signature: 

Date: 27th June 2022