



Erasure Verification Report

Monday, July 11, 2022

Erasure Verification Report

Media ID: 6417402_A1

Level 1 Erasure Verification Result: **Passed**

Level 2 Erasure Verification Result: **Passed**

This document contains the summary and detailed report of the Erasure Verification Services provided by Ontrack to U-Reach Inc.

Ontrack Erasure Verification Services provide an in-depth analysis and verification of customer provided sanitized media. Using advanced laboratory techniques and state-of-the-art proprietary data recovery tools, Ontrack inspects the media to confirm that the target data has been effectively sanitized to the standards of NIST Special Publication 800-88 Rev. 1.

Specific technical and procedural details are included in the remainder of this document.

Ontrack Media Preparation Process

To verify the effectiveness of the sanitization, Ontrack strongly advises preparation by writing two separate unique byte patterns to all logically accessible blocks of the media to simulate user data. This process ensures the entire media, including over provisioned areas, contain identifiable target data. Once prepared, the sanitization process is performed per the customer's specifications. If preparation is not possible, Ontrack performs verification to align with the NIST 800-88 r1 standard for Cryptographic Erase as outlined in section 4.7.3. This standard suggests searching the entire media for several strings to verify that no file system structures, operating system files, or common files exist.

Ontrack Verification Process and Levels of Verification

Level 1 Verification analyzes the contents of all sectors which are accessible to the user via the device interface through a Full Verification method as described in the NIST 800-88 r1 document. Ontrack uses proprietary data recovery software tools to perform this verification.

Level 2 HDD Verification analyzes the contents of all sectors that have been remapped by the G-List or hidden in a protected area like HPA/DCO/AMAC.

Level 2 SSD Verification analyzes the media at a raw NAND level. The NAND chips are removed from the controller so that all sectors of each NAND chip can be imaged. The images are then analyzed for any remnants of target data that may exist in any portion of the media including user-accessible portions, but also any bad or defective blocks, spare pool areas, or areas otherwise protected by the controller chip or hidden from the standard interface.

The Ontrack® verification is intended to evidence the independent recognition of a well-known industry leader in Erasure Verification Services for U-Reach Inc. This information is provided on an 'as is' basis. Ontrack assumes no direct, indirect or consequential liability to any third party for the information contained in this report. This report does not constitute a recommendation, endorsement or approval of any kind with respect to any product or service, and should not be relied upon as such under any circumstances.

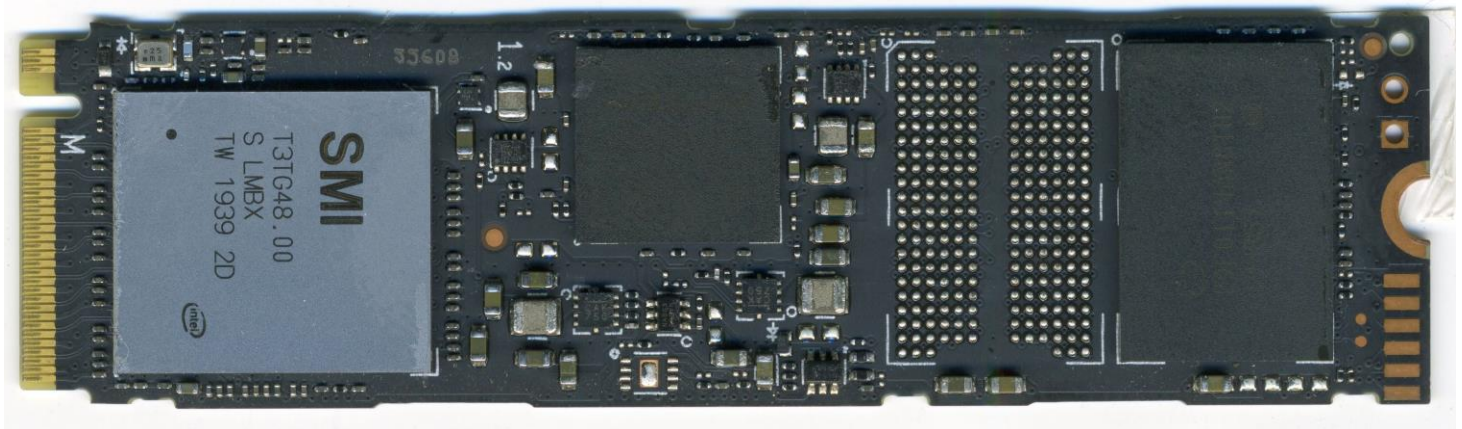
About Ontrack

Ontrack provides technology-driven services and software to help legal, corporate and government entities as well as consumers manage, recover, search, analyze, and produce data efficiently and cost-effectively. In addition to its award-winning suite of software, Ontrack provides data recovery, data destruction, electronic discovery and document review. For more information about Ontrack and its offerings please visit: www.ontrack.com or follow @Ontrack on Twitter.

Customer Information			
Company name	U-Reach Inc.	Service Order Number	6417402_A1
Media Information			
Make / Vendor	Intel	Model Number	SSDPEKKW128GB
Serial Number	BTHH00540CON128A	Firmware Version	004C
Media Type	SSD	Media Interface	NVMe
Capacity	128GB	LBA	250,069,680
Media Preparation			
Tool Used	WinHex	Revision / Build	17.06
Pattern Used 1 st Pass	0x5AA5A55A	Pattern Used 2 nd Pass	A55A5AA5
Sanitization Details			
Method Type	☒ Clear ☐ Purge ☐ Damage ☐ Destruct		
Method Used	☐ Degauss ☐ Overwrite ☒ Block Erase ☐ Crypto Erase ☐ Other:		
Tool Vendor	U-Reach Data Eraser Model: GE936	Revision/Build	2.01.09
Erasure Verification Details			
Verification Method	Full	Erasure Pattern	0x00
Percent Matching Pattern	100%	Percent Not Matching Pattern	0%
Was HPA/DCO Identified on Device?			No
Data Found	☐ File System Structures ☐ Simulated User Data ☒ No Data Found ☐ Other (See engineer comments)		
Engineer Comments			
The erasure verification result is: Passed per NIST 800-88r1 standard U-Reach prepared the drive by writing repeating byte patterns 0x5AA5A55A and 0xA55A5AA5 to all user accessible sectors to simulate user data. U-Reach executed the sanitization process on the drive using the U-Reach Data Eraser utility. See Appendix A for the Erasure Report generated during the sanitization. Ontrack performed their verification by searching the drive for the simulated data patterns as well as performing the verification to align with the NIST 800-88r1 standard for Cryptographic Erase as outlined in section 4.7.3. This standard suggests for the entire media to be searched for several strings to verify no file system structures, operating system files, or common files exist. Ontrack also searched for the known patterns in “inverted”, “byte swapped” and “bit and byte swapped” formats. The drive was found to have 100% of the user accessible sectors filled with the 0x00 erasure pattern. No simulated user data, file system structures, operating system files or common files were found			

Level 2 Results					
NAND Removal Details					
Controller Details					
Controller Manufacturer	Silicon Motion	Controller Model	T3TG48.00		
Chip Type #1					
Chip Manufacturer	Intel	Chip Model	29F01T4ANCTH2		
Pin layout	BGA-227	Number of Chips	1	Chip Capacity	128GB
Search Results Breakdown (In Percent of Pages)					
0xFF	14.70%	0x00	3.00%	Erase Pattern	N/A
User Data	N/A	File System	N/A	SSD System Area	N/A
Engineer Comments					
Level 2 verification result: Passed per NIST 800-88r1 standard					
The raw data extracted from the Flash memory chips was examined and was found to contain: - 14.70% 0xFF repeating byte pattern - 3.00% 0x00 repeating byte pattern - 82.30% encrypted data Ontrack performed their verification by searching the drive for the simulated data patterns, as well as performing their verification to align with the NIST 800-88r1 standard for Cryptographic Erase as outlined in section 4.7.3. This standard suggests for the entire media to be searched for several strings to verify no file system structures, operating system files, or common files exist. No recognizable data were found, including file system structures, operating system files, common data files or System Area data. The raw data was further examined for evidence of standard reversible scrambling methods, such as pseudo-random data generated by a Linear Feedback Shift Register, but no evidence was found. No identifiable user data was found.					

Media Analyzed: A1



Appendix A: U-Reach Data Eraser Erasure Report

SSD/HDD Erase Certification

No.: 00000496

Client: Ontrack

Disk Information

Type	NVMe
Model	INTEL SSDPEKKW128G8
Version	004C
Serial No.	BTHH00540CON128A
Capacity	119.24GB(LBA:250069680)
HPA	Doesn't exist
DCO	Doesn't exist
Sector size	512

Erase Information

Erase method: NIST SP-800-88

Errors allowed when erasing(Error/Max Allow): 0 / 100

Number of sectors skipped when bad blocks are encountered: 32 (16KB)

Start Time: 2022-06-24 17:22:21

Elapsed Time: 20:04

First bad sector(LBA): None

Bad areas ignored: None

Result: **Success**

Pass #1 - Write pattern 00h

Pass #2 - Verify 100% OK (start LBA:0h)

Additional Information

1. I hereby state that the data erasure process has been carried out in accordance with the given instructions.
2. Erasure process complies with NIST SP-800-88 data sanitization standard
3. For more information regarding this report, please contact us at info@ureach-inc.com

Server: U-Reach Inc.

Executor (signature): Momen Lu

Smart Information

Description	Value
Composite Temperature	300°K (27°C)
Available Spare	100%
Available Spare Threshold	12%
Percentage Used	2%
Data Units Read	1393.41 GB
Data Units Written	3153.07 GB
Host Read Commands	16324275
Host Write Commands	28763205
Controller Busy Time	468
Power Cycles	151
Power On Hours	14
Unsafe Shutdowns	21
Media and Data Integrity Errors	0
Warning Temperature Time	0
Critical Temperature Time	0

Machine performing the cleanup

Core Software: U-Reach Data Eraser
Machine Model: GE936
Machine ID: 34084.00056.18516.23560
Machine Version: 2.01.09
Build Date: 2022-06-18
Core module: PE5336_Pi 2.51.4
Core version: 3620-2022061801

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