

Tool Validation Report File Carving

X-Ways Forensics
Version 20.9

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Contents

Executive Summary.....	3
Introduction.....	4
Scope	4
Measuring Test Results	4
Test Data	5
Test Image Creation Process	5
Test File Summary.....	5
Test Results	6
Appendix 1 - Test Files to be Carved	12

Executive Summary

X-Ways Forensics version 20.9, was run against the test image Khyrenz-FileCarving-ClusterBoundaries.001^[1].

The below table is a summary of the test files that X-Ways Forensics carved from this image.

File Type	Number of Test Files	Exact match	Usable match	Not found	False positive	Invalid file
7Z	3		3			
AVI	3	2	1			
BMP	4	4				
DOC	3	3				
DOCX	3	3				
GIF	4	4				
HEIC	3	3				
JPEG	5	3	2		2	
MOV	5	2		3		3
MP3	4		4			
MP4	4	4				
PDF	4		4			
PNG	5	5				
SVG	3	3				
TIFF	4		4			
WAV	4	4				
WMV	3	3				
XLS	3	3				
XLSX	3	3				
ZIP	4	4				
-						
Total	74	53	18	3	2	3
Percentage		71.6%	24.3%	4%		

As this table shows, 71.6% of the test files were recovered exactly; the SHA1 file hashes were a match to the original files. In total, 95.9% of the original files were recovered in a usable state and could be successfully viewed, whilst only 4% of the original files could not be carved in a usable state. These were all MOV files.

All of the test BMP, DOC, DOCX, GIF, HEIC, MP4, PNG, SVG, WAV, WMV, XLS, XLSX, and ZIP files were carved exactly, matching on SHA-1 hash to the original files.

In addition, only 5 extra files were carved, which included duplicates of two of the test JPEG files and three empty MOV files.

Introduction

Khyrenz Ltd is a Digital Forensic consultancy based in the UK. We provide this report to document our tool validation process against X-Ways Forensics version 20.9.

Scope

This report documents the results obtained by testing file carving capability within X-Ways Forensics, version 20.9, against the raw image file: Khyrenz-FileCarving-ClusterBoundaries.001. This image file, as well as a full list of files contained within this image, are provided at: <https://www.khyrenz.com/resources/>.

X-Ways Forensics was run on a Windows 10 Professional 22H2 system and the default configuration was used unless otherwise stated below. The following processing options were selected using the fl0 menu:

- File header signature search (select all except Special Interest)
 - Respect individual byte/cluster boundary flags

Measuring Test Results

How well the tool performs against expected results is categorized as follows:

1. Exact match: Number of carved files that match on SHA1 file hash to an original test file
2. Usable match: Number of carved files that can be successfully opened and viewed, and appear similar to an original test file, so can be reasonably determined to be a 'usable' version of an original
3. Not found: No carved files match the hash or appear similar to any original files
4. False positive: A carved file is a valid file and can be opened/viewed, but is not similar to an original file (for example, may be an embedded file within an original file)
5. Invalid file: A carved file that cannot be opened or viewed

Test Data

Test Image Creation Process

A selection of test files of varying file formats was collected or generated, and then copied onto a USB device, which had been formatted to contain a 2GB NTFS volume. A raw logical image of the USB device volume was generated using FTK Imager 4.2.0.13^[2]. This image was then manually edited to remove all clusters containing NTFS metadata.

Test File Summary

A summary of test files within the image is provided below. A more detailed list of individual files is provided in Appendix 1 - Test Files to be Carved.

File Type	Number of Test Files
AVI	3
BMP	4
DOC	3
DOCX	3
GIF	4
HEIC	3
JPEG	5
MOV	5
MP3	4
MP4	4
PDF	4
PNG	5
SVG	3
TIFF	4
WAV	4
XLS	3
XLSX	3
ZIP	4
7Z	3
WMV	3
Grand Total	74

Test Results

The table below shows details regarding the files carved from the test image by foremost.

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
7Z	docsamples.7z	aec51e245dd6132a0368a46e9d338ce63fe6eebf		000013.7z			
7Z	files-test.7z	2c6126430faff9ab7547ffb788129413f9abda41		000018.7z			
7Z	sample-videos.7z	e015ae1e8916d95b58b6b1f4d4ec9e029a900081		000070.7z			
AVI	drop.avi	fc8ca556acbbb7606e5d8e2849a2701c4472d7d3		000014.avi			
AVI	Free_Test_Data_5MB_AVI.avi	3279ade4bdf41ce085551378de61cb02fa3bb5f4	000023.avi				
AVI	sample-avi-file.avi	246eecb4053487a61914510389ec300bdaf7f3c6	000056.avi				
BMP	cookiemonster.bmp	7f1e190a19b8c38c0554b6f3f10fe07924fde9ef	000010.bmp				
BMP	fish.bmp	5e3f4b6f67c4e5b25656cec1967a9ealeed85030	000020.bmp				
BMP	fish_shoal.bmp	d8ba06faldb322eaac28f0d8596ddeeec4789d5	000021.bmp				
BMP	themeparksunday.bmp	a462085a21a1582a394bef7ae7796001581b3e6b	000077.bmp				
DOC	1-MB-DOC.doc	88dc8b79636f7d5131d2446c6855ca956a176932	000002.doc				
DOC	240222.doc	589b28be22274543bf5d3a733e10957eblbabafc	000003.doc				
DOC	TestWordDoc.doc	e6d490614193a0c3c6bf5e0d7d6f68868dfdc088	000064.doc				

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
DOCX	custardcreams.docx	4d537806e0b2da9d92f2c82f9f7d321b2478f99d	000011.docx				
DOCX	demo.docx	e754885219f2bd6ef2e954d5217bbbd1130cd97d	000012.docx				
DOCX	sample4.docx	adda7b1466242f3c50a78a0e1d1257707d051318	000067.docx				
GIF	sample_5184×3456.gif	9158f6b4ad5906842f0e0d36ef787607c011b509	000047.gif				
GIF	sea_lion.gif	663739fcd615284c0e0501ab4b100b03a9a96bac	000071.gif				
GIF	sweetairsounds.gif	68efcd744820ba44595e5546e44938ac4e430017	000060.gif				
GIF	tellyscreentime.gif	d5096497f09b9cdb83e21bdfa3640be04740e2aa	000063.gif				
HEIC	sample1.heic	ff0ed3774c4f905357c7918a5dfbeb54ab04f3d7	000049.heic				
HEIC	stars.heic	33a952d6ea0e77ce7c350e381ec858336d0cadec	000074.heic				
HEIC	whitetip_shark.heic	2cd88bd240c44f9e619624c9326e87390d10d7bd	000080.heic				
JPEG	childrenstvshow.jpg	de0e76d1ec1e8a399ac7146dabea8994806ecfb5	000008.jpg				
JPEG	penguin_rocks.JPG	924aace9d1fala57f42ee4d0da84bf9b30995732		000034.jpg		TG-5 2023-04-12 22:24:43.jpg	
JPEG	penguins.JPG	2bffcca2111e8c2b624c2226ddc62ef42770c675		000037.jpg		TG-5 2023-04-12 22:44:11.jpg	
JPEG	rocketman.jpg	81b00d152ea0956cf4f232f22b7bf886870d9c73	000043.jpg				
JPEG	teaserchallenge.jpg	2f90fff0b31da682cb12a77587a4b37edcb7f18f	000061.jpg				

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
MOV	boats.MOV	32952ef12c1dbdfc6b271555afcfa254a6dd3f9			Y		
MOV	helicopter.MOV	9b5e80adaa4d282411870ccee2e2550531831915			Y		
MOV	ray.MOV	d1aa14f4bb1f7839c7ed7132756ede2599703c63			Y		
MOV	sample_1280x720_surfin_g_with_audio.mov	3f97efea36582c6cc70804c33098b6f4b574eb0e	000066.mov				
MOV	sample_960x400_ocean_with_audio.mov	126fc405911d33832f88d5dd2fc3942e9a71e896	000045.mov				
MOV							3
MP3	ringtone.mp3	c9fa731192bec4756782d94a5c44ff41eb42d72e		000042.mp3			
MP3	sample-12s.mp3	27c1fa5ab09a20ef4390a207e660320015922938		000054.mp3			
MP3	sample2.mp3	d385f3f32ca31e442473887bb3a15aal176daad0		000052.mp3			
MP3	Symphony No.6 (1st movement).mp3	9663ba6cald35c2ac59e94d51775ce775e518dac		000076.mp3			
MP4	buses_by_park.mp4	0e2b8da6ffb71124ee7e28e25094fd6fcfda45ec	000006.3gp				
MP4	park_traffic.mp4	397ffc6b972552fac17b98112da4bbf9ddfelc93	000032.3gp				
MP4	sample_1280x720.mp4	c6de00ced324fccd5ea5904afa7010baae7be735	000046.3gp				
MP4	spinning_globe.mp4	1385f0808b7ef1600b6c39244917ef1df2ce6652	000073.mp4				
PDF	allamericanroadsidediner.pdf	5e1a08448f72de397b604994552b62db14d8619a		000004.pdf			
PDF	orderingadrink.pdf	4eeeab201668779533ec2a0a27653b3e9ef2b8eb		000031.pdf			

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
PDF	sample1.pdf	9c66d2d11a2762c75136b081d0c9e9035eef0fbf		000050.pdf			
PDF	sample3.pdf	dd8774537c10c2610980361bcfc99d14dfda235e		000053.pdf			
PNG	file_example_PNG_3MB.png	727087f19369e31ed3fc80c4f1df9e9030f89103	000016.png				
PNG	kingofrock.png	8bc810de43a935aa73e00d5d2838991d0e9bfff79	000028.png				
PNG	ray_and_fish.png	78a1c8e577a004fc3ebcc024e19e2938812dd553	000041.png				
PNG	sample-bumblebee-400x300.png	46ceb41f22d0883f9d44281f77728f1cb95c4fbf	000057.png				
PNG	snorkelling.png	213af47d4c85f0f1f73ab59a41c4dccc69ab84fd	000072.png				
SVG	sample_5184×3456.svg	904c8dd28177e9a4758074c035023492b9a26cde	000048.svg				
SVG	sample-river-400x300.svg	e6aef45722e919e747a43744ce9c66bb9285d30d	000068.svg				
SVG	Sample-SVG-Image-download-for-Testing.svg	9e5fdcf6f83e752f9b4c750fadcd25a8a27fbfcf2	000069.svg				
TIFF	canoe.tif	329663cfea41b5bc7c116bd113352e38287699c2		000007.tif			
TIFF	turtle.tif	0b49e28bf07de5b6520852eccc5457b36049ac25		000078.tif			
TIFF	underwater_bmx.tif	9a2e7f18f061bb49cb16cf20807cb082d165c182		000079.tif			
TIFF	x3l_f18.tif	77f449ecel29b9f1bdbc675a6e9ee7b068b77273		000001.tif			
WAV	ImperialMarch60.wav	9884c68905888e685214fdd890742d50bfa4ec53	000027.wav				

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
WAV	PinkPanther60.wav	e3e5c1b15b53e600ca79c566290846a5ebe4511b	000039.wav				
WAV	sample-15s.wav	3aef3eb7aac8815b5657b16e27cdaa7068691668	000055.wav				
WAV	StarWars60.wav	666f49a4b798750b301eb979869f49b0cd89a387	000075.wav				
WMV	dwsample wmv 1080p.wmv	09ba4a21a76fa072fdcb60a6b3bbb20699935fd3	000015.wmv				
WMV	Free_Test_Data_20MB_WMV.wmv	ae4d8c7c1d88a21cd414766629db24f118c681ef	000024.wmv				
WMV	sample-1.wmv	a022a5de3afa8a5a07ef50a523b329917e8e42e0	000051.wmv				
XLS	file_example_XLS_5000.xls	e1754203d88aa335e9318cec1051d63d64cf4a7b	000017.xls				
XLS	fruitysmartphones.xls	634d3f3afdb0727f173fc79ed4f05e53c9410d1d	000025.xls				
XLS	sample-simple-2.xls	6d3ce41d2d72d865946e10322619319510ce9b4a	000058.xls				
XLSX	Financial Sample.xlsx	a8a6f194d2bd7c133ac7dacc23dd9fdabdc319	000019.xlsx				
XLSX	Free_Test_Data_1MB_XLSX.xlsx	8ff6edd002c9f6ec5c3a869f6146f555dd445c44	000022.xlsx				
XLSX	shoppinglist.xlsx	6ac5b1ddb3f07b071280602a4b2cd740f64f3ccd	000059.xlsx				
ZIP	linuxcmd-samplefiles.zip	99d60374b70653bdd6d97ec3dd09085423dbfbd7	000029.zip				
ZIP	mixfromsamplevids.zip	dd9287f0e2bad4ab255cbb1d2db270e6d9bdd098	000030.zip				
ZIP	tomatoketchupdabest.zip	bf82f7adf998e847b67b5bb8db3a9e943249b769	000065.zip				

Type	Filename	SHA1	Exact match	Usable match	Not found	False positive	Invalid file
ZIP	wincompressedfolder.zip	2394f4f73bd1cdf76032864440f948645bdd571	000081.zip				
Totals			53	18	3	2	3

Appendix 1 - Test Files to be Carved

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
7Z	docsamples.7z	Files downloaded from https://www.sampledocs.in/	105,984,525	aec51e245dd6132a0368a46e9d338ce63fe6eebf	0x1e80000
7Z	files-test.7z	Files downloaded from https://www.sampledocs.in/	2,591,347	2c6126430faff9ab7547ffb788129413f9abda41	0x949b000
7Z	sample-videos.7z	Files downloaded from https://sample-videos.com/	16,657,033	e015ae1e8916d95b58b6b1f4d4ec9e029a900081	0x388bec00
AVI	drop.avi	Downloaded from https://www.engr.colostate.edu/me/facil/dynamics/avis.htm	675,840	fc8ca556acbbb7606e5d8e2849a2701c4472d7d3	0x8394000
AVI	Free_Test_Data_5MB_AVI.avi	Downloaded from https://freetestdata.com/video-files/avi/	5,225,142	3279ade4bdf41ce085551378de61cb02fa3bb5f4	0xdcd8000
AVI	sample-avi-file.avi	Downloaded from https://www.learningcontainer.com/sample-avi-video-file-download/	8,324,510	246eecb4053487a61914510389ec300bdaf7f3c6	0x265aa000
BMP	cookiemonster.bmp	Created by khedley	762,246	7f1e190a19b8c38c0554b6f3f10fe07924fde9ef	0x1c80000
BMP	fish.bmp	Created by khedley	36,000,054	5e3f4b6f67c4e5b25656cec1967a9ea1eed85030	0x9729000
BMP	fish_shoal.bmp	Created by khedley	36,000,054	d8ba06fa1db322eaac28f0d8596ddeeeec4789d5	0xb97f000
BMP	themeparksunday.bmp	Created by khedley	1,024,154	a462085a21a1582a394bef7ae7796001581b3e6b	0x3b88dc00
DOC	1-MB-DOC.doc	Downloaded from https://freetestdata.com/document-files/doc/	1,048,576	88dc8b79636f7d5131d2446c6855ca956a176932	0x4d000
DOC	240222.doc	Created by khedley	882,176	589b28be22274543bf5d3a733e10957eb1babafc	0x14d000
DOC	TestWordDoc.doc	Downloaded from https://homepages.inf.ed.ac.uk/neilb/TestWordDoc.doc	19,456	e6d490614193a0c3c6bf5e0d7d6f68868dfdc088	0x26ddd000
DOCX	custardcreams.docx	Created by khedley	13,596	4d537806e0b2da9d92f2c82f9f7d321b2478f99d	0x1d3b000

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
DOCX	demo.docx	Download from https://calibre-ebook.com/downloads/demos/demo.docx	1,311,881	e754885219f2bd6ef2e954d5217bbbd1130cd97d	0x1d3f000
DOCX	sample4.docx	Downloaded from https://filesamples.com/formats/docx	14,169,117	adda7b1466242f3c50a78a0e1d1257707d051318	0x37a5bc00
GIF	sample_5184x3456.gif	Download from https://filesamples.com/formats/gif	13,189,346	9158f6b4ad5906842f0e0d36ef787607c011b509	0x22b96000
GIF	sea_lion.gif	Created by khedley	5,192,245	663739fcd615284c0e0501ab4b100b03a9a96bac	0x398a1c00
GIF	sweetairsounds.gif	Created by khedley	9,573	68efcd744820ba44595e5546e44938ac4e430017	0x26dd2000
GIF	tellyscreentime.gif	Created by khedley	8,202	d5096497f09b9cdb83e21bdfa3640be04740e2aa	0x26dda000
HEIC	sample1.heic	Downloaded from https://filesamples.com/formats/heic	293,608	ff0ed3774c4f905357c7918a5dfbeb54ab04f3d7	0x23fb6000
HEIC	stars.heic	Created by khedley	1,127,788	33a952d6ea0e77ce7c350e381ec858336d0cadec	0x3a9d5c00
HEIC	whitetip_shark.heic	Created by khedley	1,183,667	2cd88bd240c44f9e619624c9326e87390d10d7bd	0x3c824c00
JPEG	childrenstvshow.jpg	Created by khedley	100,996	de0e76d1ec1e8a399ac7146dabea8994806ecfb5	0x1c67000
JPEG	penguin_rocks.JPG	Created by khedley	2,543,860	924aace9d1fa1a57f42ee4d0da84bf9b30995732	0x1bc7d000
JPEG	penguins.JPG	Created by khedley	2,377,726	2bffcca2111e8c2b624c2226ddc62ef42770c675	0x1beeb000
JPEG	rocketman.jpg	Created by khedley	47,286	81b00d152ea0956cf4f232f22b7bf886870d9c73	0x20a32000
JPEG	teaserchallenge.jpg	Created by khedley	20,433	2f90fff0b31da682cb12a77587a4b37edcb7f18f	0x26dd5000
MOV	boats.MOV	Created by khedley	21,768,007	32952ef12c1dbdfc6b271555afcffa254a6dd3f9	0x256000

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
MOV	helicopter.MOV	Created by khedley	175,455,408	9b5e80adaa4d282411870ccee2e2550531831915	0xf5e7000
MOV	ray.MOV	Created by khedley	52,219,413	d1aa14f4bb1f7839c7ed7132756ede2599703c63	0x1c3b7000
MOV	sample_1280x720_surfing_with_audio.mov	Downloaded from https://filesamples.com/formats/mov	71,753,201	3f97efea36582c6cc70804c33098b6f4b574eb0e	0x335edc00
MOV	sample_960x400_ocean_with_audio.mov	Downloaded from https://filesamples.com/formats/mov	17,520,989	126fc405911d33832f88d5dd2fc3942e9a71e896	0x20a3e000
MP3	ringtone.mp3	Downloaded from https://file-examples.com/storage/fe235481fb64f1ca49a92b5/2017/11/file_example_MP3_5MG.mp3	5,319,693	c9fa731192bec4756782d94a5c44ff41eb42d72e	0x2051f000
MP3	sample-12s.mp3	Downloaded from https://samplelib.com/sample-mp3.html	205,470	27c1fa5ab09a20ef4390a207e660320015922938	0x2623d000
MP3	sample2.mp3	Downloaded from https://filesamples.com/formats/mp3	3,478,581	d385f3f32ca31e442473887bb3a15aa1176daad0	0x25db8000
MP3	Symphony No.6 (1st movement).mp3	Downloaded from https://filesamples.com/formats/mp3	11,650,187	9663ba6ca1d35c2ac59e94d51775ce775e518dac	0x3ad70c00
MP4	buses_by_park.mp4	Downloaded from https://samplelib.com/sample-mp4.html	5,485,935	0e2b8da6ffb71124ee7e28e25094fd6fcfda45ec	0x1719000
MP4	park_traffic.mp4	Downloaded from https://samplelib.com/sample-mp4.html	21,657,943	397ffc6b972552fac17b98112da4bbf9ddfe1c93	0x1a7d5000
MP4	sample_1280x720.mp4	Downloaded from https://filesamples.com/formats/mp4	17,436,118	c6de00ced324fccd5ea5904afa7010baae7be735	0x21af4000
MP4	spinning_globe.mp4	Downloaded from https://file-examples.com/storage/fe235481fb64f1ca49a92b5/2017/04/file_example_MP4_640_3MG.mp4	3,114,374	1385f0808b7ef1600b6c39244917ef1df2ce6652	0x3a6dcc00

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
PDF	allamericanroad sidediner.pdf	Created by khedley (save pdf in Word)	200,280	5e1a08448f72de397b604 994552b62db14d8619a	0x225000
PDF	orderingadrink. pdf	Created by khedley (save pdf/a in Word)	181,344	4eeeeab201668779533ec2 a0a27653b3e9ef2b8eb	0x1a7a8000
PDF	sample1.pdf	Downloaded from https://filesamples.com/formats/pdf	581,407	9c66d2d11a2762c75136b 081d0c9e9035eef0fbf	0x23ffe000
PDF	sample3.pdf	Downloaded from https://filesamples.com/formats/pdf	1,253,607	dd8774537c10c26109803 61bcfc99d14dfda235e	0x2610a000
PNG	file_example_P NG_3MB.png	Downloaded from https://file-examples.com/index.php/sample-images-download/	2,964,729	727087f19369e31ed3fc8 0c4f1df9e9030f89103	0x9122000
PNG	kingofrock.png	Created by khedley	7,940	8bc810de43a935aa73e00 d5d2838991d0e9bff79	0x19fc2000
PNG	ray_and_fish.pn g	Created by khedley	16,362,752	78a1c8e577a004fc3ebcc0 24e19e2938812dd553	0x1f584000
PNG	sample- bumblebee- 400x300.png	Downloaded from https://samplelib.com/sample-png.html	195,459	46ceb41f22d0883f9d442 81f77728f1cb95c4fbf	0x26d9b000
PNG	snorkelling.png	Created by khedley	9,726,635	213af47d4c85f0f1f73ab5 9a41c4dccc69ab84fd	0x39d95c00
SVG	sample_5184x3 456.svg	Downloaded from https://filesamples.com/formats/svg	7,905,340	904c8dd28177e9a475807 4c035023492b9a26cde	0x2382b000
SVG	sample-river- 400x300.svg	Downloaded from https://samplelib.com/sample-svg.html	300,672	e6aef45722e919e747a43 744ce9c66bb9285d30d	0x387dfc00
SVG	Sample-SVG- Image- download-for- Testing.svg	Downloaded from https://www.learningcontainer.com/wp-content/uploads/2020/08/Sample-SVG-Image-download-for-Testing.svg	607,834	9e5fdcf6f83e752f9b4c75 0fadcd25a8a27fbfcf2	0x38829c00
TIFF	canoe.tif	Downloaded from https://people.math.sc.edu/Burkardt/data/tif/tif.html	69,708	329663cfea41b5bc7c116 bd113352e38287699c2	0x1c55000
TIFF	turtle.tiff	Created by khedley	14,252,122	0b49e28bf07de5b652085 2eccc5457b36049ac25	0x3b988c00

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
TIFF	underwater_bmx.tif	Downloaded from https://people.math.sc.edu/Burkardt/data/tif/tif.html	1,064,238	9a2e7f18f061bb49cb16cf20807cb082d165c182	0x3c720c00
TIFF	x31_f18.tif	Downloaded from https://people.math.sc.edu/Burkardt/data/tif/tif.html	307,870	77f449ece129b9f1bdbc675a6e9ee7b068b77273	0x0
WAV	ImperialMarch60.wav	Downloaded from https://www2.cs.uic.edu/~i101/SoundFiles/ImperialMarch60.wav	2,646,044	9884c68905888e685214fdd890742d50bfa4ec53	0x19d3b000
WAV	PinkPanther60.wav	Downloaded from https://www2.cs.uic.edu/~i101/SoundFiles/PinkPanther60.wav	2,646,044	e3e5c1b15b53e600ca79c566290846a5ebe4511b	0x1c130000
WAV	sample-15s.wav	Downloaded from https://samplelib.com/sample-wav.html	3,382,316	3aef3eb7aac8815b5657b16e27cdaa7068691668	0x26270000
WAV	StarWars60.wav	Downloaded from https://www2.cs.uic.edu/~i101/SoundFiles/StarWars60.wav	2,646,044	666f49a4b798750b301eb979869f49b0cd89a387	0x3aae9c00
WMV	dwsample wmv 1080p.wmv	Downloaded from https://www.dwsamplefiles.com/download-wmv-sample-files/	53,061,713	09ba4a21a76fa072fdbcb60a6b3bbb20699935fd3	0x8439000
WMV	Free_Test_Data_20MB_WMV.wmv	Downloaded from https://freetestdata.com/video-files/wmv/	5,251,496	ae4d8c7c1d88a21cd414766629db24f118c681ef	0xe1d4000
WMV	sample-1.wmv	Downloaded from https://getsamplefiles.com/sample-video-files/wmv#google_vignette	30,586,663	a022a5de3afa8a5a07ef50a523b329917e8e42e0	0x2408c000
XLS	file_example_XLS_5000.xls	Downloaded from https://file-examples.com/wp-content/storage/2017/02/file_example_XLS_5000.xls	672,256	e1754203d88aa335e9318cec1051d63d64cf4a7b	0x93f6000
XLS	fruitysmartphones.xls	Created by khedley	69,632	634d3f3afdb0727f173fc79ed4f05e53c9410d1d	0xf5d6000
XLS	sample-simple-2.xls	Downloaded from https://samplelib.com/sample-xls.html	6,144	6d3ce41d2d72d865946e10322619319510ce9b4a	0x26dcb000
XLSX	Financial Sample.xlsx	Downloaded from https://go.microsoft.com/fwlink/?LinkID=521962	83,418	a8a6f194d2bd7c133ac7dacc23dd9fdabdc319	0x9714000

Type	Filename	Origin	Size (bytes)	SHA1	Offset (bytes)
XLSX	Free_Test_Data_1MB_XLSX.xlsx	Downloaded from https://freetestdata.com/document-files/xlsx/	1,059,381	8ff6edd002c9f6ec5c3a869f6146f555dd445c44	0xdbd5000
XLSX	shoppinglist.xlsx	Created by khedley	9,604	6ac5b1ddb3f07b071280602a4b2cd740f64f3ccd	0x26dcf000
ZIP	linuxcmd-samplefiles.zip	Files downloaded from https://sample-videos.com/	1,444,790	99d60374b70653bdd6d97ec3dd09085423dbfbd7	0x19fc4000
ZIP	mixfromsamplevids.zip	Files downloaded from https://sample-videos.com/	6,826,135	dd9287f0e2bad4ab255cb1d2db270e6d9bdd098	0x1a125000
ZIP	tomatoketchupdabest.zip	Files created by khedley	52,940	bf82f7adf998e847b67b5bb8db3a9e943249b769	0x26de2000
ZIP	wincompressedfolder.zip	Files downloaded from https://sample-videos.com/	41,940,099	2394f4f73bd1cdcf76032864440f948645bdd571	0x3c945c00

¹ <https://www.khyrenz.com/resources/>

² <https://www.exterro.com/ftk-imager>