Mobilyze v2017.1

Test Results for Mobile Device Acquisition Tool

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Homeland Security

Science and Technology

Test Results for Mobile Device Acquisition Tool:
Mobilyze v2017.1

Contents

Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the Department of Homeland Security (DHS), the National Institute of Justice (NIJ), and the National Institute of Standards and Technology Special Program Office (SPO) 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.

This document reports the results from testing BlackBag Tech's Mobilyze v2017.1 across supported mobile devices i.e., Android and iOS.

Test results from other tools can be found on the DHS S&T-sponsored digital forensics web page.

How to Read This Report

This report is divided into four sections. Section 1 identifies and provides a summary of any significant anomalies observed in the test runs. This section is sufficient for most readers to assess the suitability of the tool for the intended use. Section 2 identifies the mobile devices used for testing. Section 3 lists testing environment, the internal memory data objects used to populate the mobile devices. Section 4 provides an overview of the test case results reported by the tool.

Test Results for Mobile Device Acquisition Tool

Tool Tested:	Mobilyze
Software Version:	v2017.1
Supplier:	Blackbag Technologies
Address:	300 Piercy Road San Jose, CA 95138
Tel:	(408) 844-8890
WWW:	[Blackbag Technologies Website](#)

1 Results Summary

Blackbag Tech's Mobilyze allows investigators to acquire, view and preserve the data held on any iOS or Android device. Mobilyze was tested for its ability to acquire active data from the internal memory of Android and iOS devices. Except for the following anomalies, the tool acquired all supported data objects completely and accurately for all mobile devices tested.

***Connectivity*:**
- Connectivity was not successfully established. (Device: *LG G4*)
- An error message was not returned when connectivity is disrupted during data extraction. (Devices: *Android, iOS)*

***Subscriber related data*:**
- The MSISDN was not reported. (Device: *Galaxy S3*)

***Personal Information Management (PIM) data*:**
- Unique contacts/address book entries are redundantly reported. (Device: *iPhone 4*)
- Long contacts/address book entries are truncated within the preview-pane. (Devices: *Android, iOS*)
- Unique calendar entries are redundantly reported. (Device: *iPhone 4*)
- Calendar entries are not reported. (Devices: *Android*)
- Memo entries are not reported. (Devices: *Android, iOS*)
- Call logs are not reported. (Devices: *Ellipsis 8, Galaxy Tab-E, Galaxy Tab S2*)
- Unique SMS and MMS messages are redundantly reported. (Device: *iPhone 4*)
- SMS and MMS (i.e., audio, graphic, video) are not reported. (Devices: *Ellipsis 8, Galaxy Tab-E, Galaxy Tab S2*)
- Group SMS messages are not reported. (Devices: *Galaxy S6 Edge Plus, HTC 10*)
- MMS message attachments (i.e., audio, video) are not reported. (Devices: *Galaxy S3, Galaxy S5, LG G4, LG G5, Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Galaxy GS7, Motorola Z Force, HTC 10, Samsung GS7 Edge, Galaxy Note 3, iOS*)

- ▪ Deleted SMS messages are redundantly reported. (Device: *iPad Air*)

Stand-alone Files:
- ▪ Audio files (e.g., mp3, wav) are not reported. (Devices: *Android, iOS*)
- ▪ Document files (i.e., .txt, .pdf) are not reported. (Devices: *Android, iOS*)
- ▪ Video files are redundantly reported. (Device: *iPhone 4*)

Social media Data:
- ▪ Social media related data (i.e., LinkedIn) is not reported. (Device: *Galaxy Note 3*)
- ▪ Social media related data (i.e., Facebook, LinkedIn) is not reported. (Devices: *Galaxy S3, Galaxy S5*)
- ▪ Social media related data (i.e., Facebook, Twitter) are not reported. (Device: *iPhone 5S*)
- ▪ Social media related data (i.e., Facebook, Twitter, LinkedIn) are not reported. (Devices: *iPad Mini, iPad Air*)
- ▪ Social media related data (i.e., LinkedIn, Twitter, Instagram) are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- ▪ Social media related data (i.e., Facebook, LinkedIn, Twitter, Instagram) are not reported. (Devices: *LG G5, Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Motrola Z Force, HTC 10, Samsung Galaxy GS7 Edge, Ellipsis 8, iPhone 6S Plus, iPhone 7 Plus, iPad Pro*)
- ➢ **Note:** *The acquisition and reporting of social media related data extracted from a mobile device is dependent upon various factors - the state of the device (e.g., jailbroken, rooted), the data extraction method (e.g., logical, physical), the version of the app and how the data is stored.*

Internet Related Data:
- ▪ Internet related data (i.e., bookmarks, history) are not reported. (Devices: *LG G5, HTC 10, Samsung GS7, Samsung GS7 Edge, Galaxy Note 3, Galaxy Tab-E, Galaxy Tab S2*)
- ▪ Email related data is not reported. (Devices: *Android, iOS*)

GPS Related Data:
- ▪ No GPS (i.e., Maps application) longitude/latitude – location data is reported. (Devices: *Android, iPhone 5S, iPhone 7 Plus*)
- ▪ Email related data is not reported. (Devices: *Android, iOS*)

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing Mobilyze v2017.1.

Make	Model	OS	Firmware	Network
Apple	iPhone 4	iOS v4.3.3 (8J2)	04.10.01	GSM
Apple	iPhone 5S	iOS 7.1 (11D167)	2.18.02	CDMA
Apple	iPhone 6S Plus	iOS 9.2.1 (13C75)	1.23.00	CDMA
Apple	iPhone 7 Plus	iOS 10.2 (14C92)	1.33.00	CDMA
Apple	iPad Mini	iOS 9.2.1 (13B143)	4.32.00	CDMA
Apple	iPad Air	iOS 7.1 (11D167)	2.18.02	CDMA
Apple	iPad Pro	iOS 9.2.1 (13C75)	4.52.00	CDMA
Samsung	Galaxy S3 SGH-1747	Android 4.1.2	1747UCDMG2	GSM
Samsung	Galaxy S5 SM-G900V	Android 4.2.2	G900V.05	CDMA
LG	G4	Android 5.1.1	LMY47D	CDMA
LG	G5	Android 6.0.1	MMB29M	CDMA
Motorola	Droid Turbo2	Android 5.1.1	LCK23.130-23	CDMA
Samsung	Galaxy S6 Edge Plus – SM-G928V	Android 5.1.1	LMY47X.G928VVRU2AOJ2	CDMA
Samsung	J3 – SM-J320V	Android 6.0.1	MMB29M.J320VVRU2AP12	CDMA
Google	Pixel XL	Android 7.1.1	NMF26U	CDMA
Samsung	GS7 – SM-G930V	Android 6.0.1	MMB29M.G930VVRU4AP13	CDMA
Motorola	Z Force XT1650	Android 7.0	NCLS25.86-11-4	CDMA
HTC 10	HTC6545LVW	Android 6.0.1	1.85.605.8.8.0_g CL774095	CDMA
Samsung	GS7 Edge SM-G935V	Android 6.0.1	MMB29M.G935VVRS4APH1	CDMA
Samsung	Galaxy Note3	Android 4.4.2		
Ellipsis 8	QTAQZ3	Android 4.4.2	KOT49H	CDMA

Make	Model	OS	Firmware	Network
Samsung	Galaxy Tab-E	Android 5.1.1	LMY47X.T567VVRU1AOH1	CDMA
Samsung	Galaxy Tab S2	Android 5.1.1	LMY47X.T817BVRU2AOJ2	CDMA

Table 1: Mobile Devices

3 Testing Environment

The tests were run in the NIST CFTT lab. This section describes the selected test execution environment, and the data objects populated onto the internal memory of mobile devices.

3.1 Execution Environment

Mobilyze v2017.1 Build 20170318.001406-10cc066 was installed on Mac OS X v10.12.5.

3.2 Internal Memory Data Objects

Mobilyze v2017.1 was measured by analyzing acquired data from the internal memory of pre-populated mobile devices. Table 2 defines the data objects and elements used for populating mobile devices provided the mobile device supports the data element.

Data Objects	Data Elements
Address Book Entries	*Regular Length*
	Maximum Length
	Special Character
	Blank Name
	Regular Length, email
	Regular Length, graphic
	Regular Length, Address
	Deleted Entry
	Non-Latin Entry
	Contact Groups
PIM Data: Datebook/Calendar; Memos	*Regular Length*
	Maximum Length
	Deleted Entry
	Special Character
	Blank Entry
Call Logs	*Incoming*
	Outgoing
	Missed
	Incoming – Deleted
	Outgoing – Deleted
	Missed - Deleted
Text Messages	*Incoming SMS – Read*
	Incoming SMS – Unread

Data Objects	Data Elements
	Outgoing SMS
	Incoming EMS – Read
	Incoming EMS – Unread
	Outgoing EMS
	Incoming SMS – Deleted
	Outgoing SMS – Deleted
	Incoming EMS – Deleted
	Outgoing EMS – Deleted
	Non-Latin SMS/EMS
MMS Messages	*Incoming Audio*
	Incoming Graphic
	Incoming Video
	Outgoing Audio
	Outgoing Graphic
	Outgoing Video
Application Data	*Device Specific App Data*
Stand-alone data files	*Audio*
	Graphic
	Video
	Audio – Deleted
	Graphic - Deleted
	Video - Deleted
Internet Data	*Visited Sites*
	Bookmarks
	E-mail
Location Data	*GPS Coordinates*
	Geo-tagged Data
Social Media Data	*Facebook*
	Twitter
	LinkedIn
	Instagram

Table 2: Internal Memory Data Objects

4   Test Results

This section provides the test cases results reported by the tool. Sections 4.1 – 4.2 identify the mobile device operating system type, media (e.g., Android, iOS) and the make and model of mobile devices used for testing Mobilyze v2017.1.

The *Test Cases* column (internal memory acquisition) in sections 4.1 - 4.2 are comprised of two sub-columns that define a particular test category and individual sub-categories that are verified when acquiring the internal memory for supported mobile devices within each test case. Each individual sub-category row results for each mobile device tested. The results are as follows:

As Expected: the mobile forensic application returned expected test results – the tool acquired and reported data from the mobile device successfully.

Partial: the mobile forensic application returned some of data from the mobile device.

Not As Expected: the mobile forensic application failed to return expected test results – the tool did not acquire or report supported data from the mobile device successfully.

NA: Not Applicable – the mobile forensic application is unable to perform the test or the tool does not provide support for the acquisition for a particular data element.

4.1 Android Mobile Devices

The internal memory contents for Android devices were acquired and analyzed with Mobilyze v2017.1.

All test cases pertaining to the acquisition of supported Android devices were successful with the exception of the following.

- Connectivity was not successfully established to the LG G4.
- An error message is not provided when connectivity is disrupted for all Android devices.
- Subscriber related data (i.e., MSISDN) was not reported for the Galaxy S3.
- Long contact/address book entries are truncated within the preview-pane view for all Android devices.
- Calendar entries are not reported for all Android devices.
- Memo entries are not reported for all Android devices.
- Call logs (i.e., incoming, outgoing, missed) are not reported for the Ellipsis 8, Galaxy Tab-E and the Galaxy Tab S2.
- SMS and MMS messages are not reported for the Ellipsis 8, Galaxy Tab-E, and the Galaxy Tab S2.
- Group SMS messages are not reported for the Galaxy S6 Edge Plus and the HTC 10.
- MMS message attachments (i.e., audio, video) are not reported for the Galaxy S3, Galaxy S5, LG G4, LG G5, Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Galaxy GS7, Motorola Z Force, HTC 10, Samsung GS7 Edge and the Galaxy Note 3.
- Stand-alone audio files are not reported for all Android devices.
- Stand-alone document files (e.g., .txt, .pdf) are not reported for all Android devices.
- Social media related data (i.e., Facebook, LinkedIn) are not reported for the Galaxy S3 and the Galaxy S5.
- Social media related data (i.e., LinkedIn, Twitter, Instagram) are not reported for the Galaxy Tab-E and the Galaxy Tab S2.
- Social media related data (i.e., Facebook, LinkedIn, Twitter, Instagram) are not reported for the LG G5, Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Motorola Z Force, HTC 10, Samsung Galaxy GS7 Edge and the Ellipsis 8.
- Social media related data (i.e., LinkedIn) is not reported for the Galaxy Note 3.
- Email related data is not reported for all Android devices.
- Internet related data (i.e., bookmarks, history) are not reported for the LG G5, HTC 10, Samsung GS7, Samsung GS7 Edge, Galaxy Note 3, Galaxy Tab-E and the Galaxy Tab S2.
- No Maps GPS related data (i.e., longitude, latitude) coordinates are reported for all Android devices.

See Table 3a, 3b below for more details.

Mobilyze v2017.1								
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*						
		Galaxy S3	Galaxy S5	LG G4	LG G5	Motorola Droid Turbo 2	Galaxy S6 Edge Plus	Samsung J3	Google Pixel XL
Acquisition	Acquire All	*As Expected*	*As Expected*	*Not As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Disrupted	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Reporting	Preview-Pane	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Generated Reports	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Equipment/ User Data	IMEI	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	MEID/ESN	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	MSISDN	*Not As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
PIM Data	Contacts	*Partia*	*Partial*	*NA*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
	Calendar	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Memos/ Notes	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Call Logs	Incoming	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Outgoing	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Missed	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
SMS Messages	Incoming	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*Partial*	*As Expected*	*As Expected*
	Outgoing	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*Partial*	*As Expected*	*As Expected*
MMS Messages	Graphic	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Audio	*Partial*	*Partial*	*NA*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
	Video	*Partial*	*Partial*	*NA*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
Stand-alone Files	Graphic	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Audio	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Video	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Application Data	Documents (txt, pdf files)	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*

Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android							
		Galaxy S3	Galaxy S5	LG G4	LG G5	Motorola Droid Turbo 2	Galaxy S6 Edge Plus	Samsung J3	Google Pixel XL
Social Media Data	Facebook	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Twitter	As Expected	As Expected	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	LinkedIn	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Instagram	NA	NA	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
Internet Data	Bookmarks	As Expected	As Expected	NA	Not As Expected	As Expected	As Expected	As Expected	As Expected
	History	As Expected	As Expected	NA	Not As Expected	As Expected	As Expected	As Expected	As Expected
	Email	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
GPS Data	Coordinates /Geo-tagged	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
Non-Latin Character	Reported in native format	As Expected	As Expected	NA	As Expected	As Expected	As Expected	As Expected	As Expected
Hashing	Case File/ Individual Files	As Expected	As Expected	NA	As Expected	As Expected	As Expected	As Expected	As Expected
Case File Data Protection	Modify Case Data	As Expected	As Expected	NA	As Expected	As Expected	As Expected	As Expected	As Expected

Table 3a: Android Mobile Devices

Mobilyze v2017.1								
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*						
		Samsung GS7/GS7 Edge	Motorol Z Force	HTC 10	Galaxy Note3	Ellipsis 8	Galaxy Tab-E	Galaxy Tab S2
Acquisition	Acquire All	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Disrupted	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Reporting	Preview-Pane	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Generated Reports	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Equipment/ User Data	IMEI	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	MEID/ESN	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	MSISDN	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
PIM Data	Contacts	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
	Calendar	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Memos/ Notes	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Call Logs	Incoming	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Outgoing	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Missed	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
SMS Messages	Incoming	*As Expected*	*As Expected*	*Partial*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Outgoing	*As Expected*	*As Expected*	*Partial*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
MMS Messages	Graphic	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Audio	*Partial*	*Partial*	*Partial*	*Partial*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Video	*Partial*	*Partial*	*Partial*	*Partial*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Stand-alone Files	Graphic	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Audio	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Video	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Application Data	Documents (txt, pdf files)	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*

Mobilyze v2017.1							
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*						
		Samsung GS7/GS7 Edge	Motorol Z Force	HTC 10	Galaxy Note3	Ellipsis 8	Galaxy Tab-E	Galaxy Tab S2
Social Media Data	Facebook	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*As Expected*	*As Expected*
	Twitter	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	LinkedIn	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Instagram	*Not As Expected*	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Internet Data	Bookmarks	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	History	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	Email	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
GPS Data	Coordinates/Geo-tagged	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Non-Latin Character	Reported in native format	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Hashing	Case File/ Individual Files	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Case File Data Protection	Modify Case Data	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*

Table 3b: Android Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with Mobilyze v2017.1.

All test cases pertaining to the acquisition of supported iOS devices were successful with the exception of the following across all iOS devices.

- An error message is not provided when connectivity is disrupted for all iOS devices.
- Contacts/address book entries are redundantly reported within the preview-pane and generated report for the iPhone 4.
- Long contact/address book entries are truncated within the preview-pane view for all iOS devices.
- Calendar entries are redundantly reported within the preview-pane and generated report for the iPhone4.
- Memo entries are not reported for all iOS devices.
- SMS and MMS messages are redundantly reported within the preview-pane and generated report for the iPhone4.
- Deleted SMS messages are redundantly reported within the preview-pane and generated report for the iPad Air.
- MMS message attachments (i.e., audio, video) are not reported for all iOS devices.
- Stand-alone video files are redundantly reported within the preview-pane and generated report for the iPhone 4.
- Stand-alone audio files are not reported for all iOS devices.
- Stand-alone document files (e.g., .txt, .pdf) are not reported for all iOS devices.
- Social media related data (i.e., Facebook, Twitter) are not reported for the iPhone 5S.
- Social media related data (i.e., Facebook, Twitter, LinkedIn) are not reported for the iPad Mini and the iPad Air.
- Social media related data (i.e., Facebook, Twitter, LinkedIn, Instagram) are not reported for the iPhone 6S Plus, iPhone 7 Plus and the iPad Pro.
- Email related data is not reported for all iOS devices.
- No Maps GPS related data (i.e., longitude, latitude) coordinates are reported for the iPhone 5S and the iPhone 7 Plus.

See Table 4 below for more details.

Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS						
		iPhone 4	iPhone 5S	iPhone 6S Plus	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
Acquisition	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Disrupted	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
Reporting	Preview-Pane	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Generated Reports	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Equipment/ User Data	IMEI	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA
	MSISDN	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
PIM Data	Contacts	Partial	Partial	Partial	Partial	Partial	Partial	Partial
	Calendar	Partial	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Memos/Notes	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
Call Logs	Incoming	As Expected	As Expected	As Expected	As Expected	NA	NA	NA
	Outgoing	As Expected	As Expected	As Expected	As Expected	NA	NA	NA
	Missed	As Expected	As Expected	As Expected	As Expected	NA	NA	NA
SMS Messages	Incoming	Partial	As Expected	As Expected	As Expected	As Expected	Partial	As Expected
	Outgoing	Partial	As Expected	As Expected	As Expected	As Expected	Partial	As Expected
MMS Messages	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	Partial	Partial	Partial	Partial	Partial	Partial	Partial
	Video	Partial	Partial	Partial	Partial	Partial	Partial	Partial
Stand-alone Files	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Video	Partial	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Application Data	Documents (txt, pdf files)	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Facebook	NA	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected

Mobilyze v2017.1							
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: iOS*					
		iPhone 4	iPhone 5S	iPhone 6S Plus	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
Social Media Data	Twitter	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	LinkedIn	*NA*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Instagram	*NA*	*NA*	*Not As Expected*	*Not As Expected*	*NA*	*NA*	*Not As Expected*
Internet Data	Bookmarks	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	History	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Email	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
GPS Data	Coordinates/ Geo-tagged	*As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*As Expected*	*As Expected*	*As Expected*
Non-Latin Character	Reported in native format	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Hashing	Case File/ Individual Files	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Case File Data Protection	Modify Case Data	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*

Table 4: iOS Mobile Devices