



MOBILedit Forensic v8.6.0.20354

Test Results for Mobile Device Acquisition Tool

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**Homeland
Security**

Science and Technology

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November 2016

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MOBILedit Forensic v8.6.0.20354

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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 website](#).

This document reports the results from testing MOBILedit Forensic v8.6.0.20354 across supported mobile devices e.g., smart phones, and feature phones.

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 and Universal Integrated Circuit Cards (UICC) data objects used to populate the mobile devices. Section 4 provides an overview of the test case results reported by the tool. The full test data is available at the [CFTT website](#).

Test Results for Mobile Device Acquisition Tool

Tool Tested: MOBILedit Forensic

Software Version: v8.6.0.20354

Supplier: Compelson Labs

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1 Results Summary

MOBILedit Forensic allows examiners to view, search or retrieve all data from a phone. This data includes call history, phonebook, text messages, multimedia messages, files, calendars, notes, reminders and raw application data. It will also retrieve phone information such as IMEI, operating systems, firmware including SIM details (IMSI), ICCID and location area information. Where possible MOBILedit Forensic is also able to retrieve deleted data from phones and bypass the passcode, PIN and phone backup encryption.

MOBILedit Forensic v8.6.0.20354 was tested for its ability to acquire active data from the internal memory of supported mobile devices and associated media (i.e., smart phones, feature phones). Except for the following anomalies, the tool acquired all supported data objects completely and accurately for all mobile devices tested.

Acquisition Disruption:

- Acquisition interruption did not produce an error message. (Media: *UICCs*)

Subscriber Related Data:

- Subscriber related data (i.e., MSISDN) was not reported. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E, Galaxy Tab S2, iOS*)
- Subscriber and equipment related data (i.e., MSISDN, SPN) was not reported. (Media: *UICCs*)

Personal Information Management (PIM) data:

- Memos were not reported. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E, Galaxy Tab S2*)
- Call log data was not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Multiple recipients (i.e., each individual contact) within a group SMS message were not reported. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4*)
- The date/time stamp (i.e., month portion) for SMS and MMS messages was truncated within the preview. (Device: *Galaxy S6*)

- MMS attachments (audio, video, graphics) cannot be opened within the preview-pane using the associated application. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4*)
- Incoming MMS attachments (audio, video, graphics) cannot be successfully exported to the hard drive. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4*)
- Outgoing MMS attachments (audio, video) cannot be successfully exported to the hard drive. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4*)
- SMS and MMS messages were not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)

Application Data:

- Application related data (i.e., txt, pdf files) was not acquired. (Devices: *iOS*)

Social media Data:

- Social media related data i.e., Facebook, LinkedIn, Twitter and Instagram were not reported. (Device: *Galaxy S6 Edge Plus*)
- Social media related data i.e., Facebook, LinkedIn and Instagram were not reported. (Devices: *Galaxy S6, LG G4, Galaxy Tab-E, and Galaxy Tab S2*)
- Partial social media related data i.e., profile information, graphics were reported for Facebook and Instagram. (Devices: *iOS*)

Internet Related Data:

- Internet related data (i.e., Bookmarks, History, Email) were not reported. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E, Galaxy Tab S2*)
- Internet related data (i.e., Email or email related data) was not reported. (Devices: *iOS*)

GPS Related Data:

- GPS (longitude / latitude coordinates) for map routes were not reported. (Devices: *Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E, Galaxy Tab S2*)

UICCs (Universal Integrated Circuit Cards)

- Location related data (i.e., LOCI, GPRSLOCI) was not reported.
- Hash values were not present for acquired data.

NOTES:

- Cannot open MMS attachments (Audio, Video, Graphic file) with the associated application within the MOBILedit preview pane. Individual MMS attachments must be saved to disk and previewed with a third party application for all iOS devices.

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing MOBILedit Forensic v8.6.0.20354.

Make	Model	OS	Firmware	Network
Apple iPhone	6	iOS 9.2.1 (13C75)	4.52.00	CDMA
Apple iPhone	6S	iOS 9.2.1 (13C75)	1.23.00	CDMA
Apple iPhone	6S Plus	iOS 9.2.1 (13C75)	1.23.00	CDMA
Apple iPad	Mini	iOS 9.2.1 (13B143)	4.32.00	CDMA
Apple iPad	Pro	iOS 9.2.1 (13C75)	4.52.00	CDMA
Samsung Galaxy	S6	Android 5.1.1	LMY47.G920VVRU4BOK7	CDMA
Samsung Galaxy	S6 Edge Plus	Android 5.1.1	LMY47X.G928VVRU2AOJ2	CDMA
LG	G4	Android 5.1.1	LMY47D	CDMA
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

MOBILedit Forensic v8.6.0.20354 was installed on Windows 7 v6.1.7601.

3.2 Internal Memory Data Objects

MOBILedit Forensic v8.6.0.20354 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	
	<i>Regular Length</i>
	<i>Maximum Length</i>
	<i>Special Character</i>
	<i>Blank Name</i>
	<i>Regular Length, email</i>
	<i>Regular Length, graphic</i>
	<i>Regular Length, Address</i>
	<i>Deleted Entry</i>
	<i>Non-Latin Entry</i>
	<i>Contact Groups</i>
PIM Data	
Datebook/Calendar	<i>Regular Length</i>
Memos	<i>Maximum Length</i>
	<i>Deleted Entry</i>
	<i>Special Character</i>
	<i>Blank Entry</i>
Call Logs	
	<i>Incoming</i>
	<i>Outgoing</i>
	<i>Missed</i>
	<i>Incoming – Deleted</i>
	<i>Outgoing – Deleted</i>
	<i>Missed - Deleted</i>
Text Messages	
	<i>Incoming SMS – Read</i>
	<i>Incoming SMS – Unread</i>
	<i>Outgoing SMS</i>
	<i>Incoming EMS – Read</i>
	<i>Incoming EMS – Unread</i>
	<i>Outgoing EMS</i>
	<i>Incoming SMS – Deleted</i>
	<i>Outgoing SMS – Deleted</i>
	<i>Incoming EMS – Deleted</i>
	<i>Outgoing EMS – Deleted</i>
	<i>Non-Latin SMS/EMS</i>
MMS Messages	
	<i>Incoming Audio</i>
	<i>Incoming Graphic</i>
	<i>Incoming Video</i>
	<i>Outgoing Audio</i>
	<i>Outgoing Graphic</i>
	<i>Outgoing Video</i>
Application Data	

Data Objects	Data Elements
	<i>Device Specific App Data</i>
Stand-alone data files	
	<i>Audio</i>
	<i>Graphic</i>
	<i>Video</i>
	<i>Audio – Deleted</i>
	<i>Graphic - Deleted</i>
	<i>Video - Deleted</i>
Internet Data	
	<i>Visited Sites</i>
	<i>Bookmarks</i>
	<i>E-mail</i>
Location Data	
	<i>GPS Coordinates</i>
	<i>Geo-tagged Data</i>
Social Media Data	
	<i>Facebook</i>
	<i>Twitter</i>
	<i>LinkedIn</i>
	<i>Instagram</i>

Table 2: Internal Memory Data Objects

3.3 UICC Data Objects

The table below (Table 3) provides an overview of the data elements populated on Universal Integrated Circuit Cards (UICCs).

Data Objects	Data Elements
Abbreviated Dialing Numbers (ADN)	
	<i>Maximum Length</i>
	<i>Special Character</i>
	<i>Blank Name</i>
	<i>Non-ASCII Entry</i>
	<i>Regular Length - Deleted Number</i>
Call Logs	
	<i>Last Numbers Dialed (LND)</i>
Text Messages	
	<i>Incoming SMS - Read</i>
	<i>Incoming SMS - Unread</i>
	<i>Non-ASCII SMS</i>
	<i>Incoming SMS - Deleted</i>
	<i>Non-ASCII EMS</i>
	<i>Incoming EMS - Deleted</i>

4 Test Results

This section provides the test cases results reported by the tool. Sections 4.1 – 4.3 identify the mobile device operating system type (e.g., Android, iOS) and the make and model of mobile devices used for testing MOBILedit Forensic v8.6.0.20354.

The *Test Cases* column (internal memory acquisition) in sections 4.1 - 4.3 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 and UICCs within each test case. Each individual sub-category row results for each mobile device/UICC 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/UICC successfully.

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

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/UICC 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 MOBILedit Forensic v8.6.0.20354.

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

- Subscriber related data (i.e., MSISDN) was not reported for Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E or the Galaxy Tab S2.
- Memos were not reported for the Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E or the Galaxy Tab S2.
- Call log data was not reported for the Galaxy Tab-E and the Galaxy Tab S2 via Hangouts dialer.
- Multiple recipients (i.e., each individual contact) within group SMS messages are not reported for the Galaxy S6, Galaxy S6 Edge Plus or the LG G4.
- The month portion of the SMS/MMS date/time stamp is truncated within the preview for the Galaxy S6.
- MMS attachments (i.e., audio, video, graphics) cannot be opened within preview with the associated application for the Galaxy S6, Galaxy S6 Edge Plus or the LG G4.
- Incoming MMS attachments (i.e., audio, video, graphics) cannot be successfully exported to the hard drive when saving the attachment to a specific folder for the Galaxy S6, Galaxy S6 Edge Plus or the LG G4.
- Outgoing MMS attachments (i.e., audio, video) are not successfully saved to the hard drive when clicking the attachment and saving to a specific folder for the Galaxy S6, Galaxy S6 Edge Plus or the LG G4.
- SMS and MMS messages using the application FireChat were not reported for the Galaxy Tab-E and the Galaxy Tab S2.
- Social media related data i.e., Facebook, LinkedIn, Twitter and Instagram were not reported for the Galaxy S6 Edge Plus.
- Social media related data i.e., Facebook, LinkedIn and Instagram were not reported for the Galaxy S6, LG G4, Galaxy Tab-E and the Galaxy Tab S2. *Note: Partial twitter data (i.e., pictures, profile information) was reported.*
- Internet related data (i.e., Bookmarks, History, Email) were not reported for the Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E or the Galaxy Tab S2.
- GPS (longitude / latitude coordinates) for map routes were not reported for the Galaxy S6, Galaxy S6 Edge Plus, LG G4, Galaxy Tab-E or the Galaxy Tab S2.

See Table 4 below for more details.

MOBILedit Forensic v8.6.0.20354						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android				
		Galaxy S6	Galaxy S6 Edge Plus	LG G4	Galaxy Tab-E	Galaxy Tab S2
Acquisition	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected
	Disrupted	As Expected	As Expected	As Expected	As Expected	As Expected
Reporting	Preview-Pane	As Expected	As Expected	As Expected	As Expected	As Expected
	Generated Reports	As Expected	As Expected	As Expected	As Expected	As Expected
Equipment/ User Data	IMEI	As Expected	As Expected	As Expected	As Expected	As Expected
	MEID/ESN	NA	NA	NA	NA	NA
	MSISDN	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
PIM Data	Contacts	As Expected	As Expected	As Expected	As Expected	As Expected
	Calendar	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
Call Logs	Incoming	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Outgoing	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Missed	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
SMS Messages	Incoming	Partial	Partial	Partial	Not As Expected	Not As Expected
	Outgoing	Partial	Partial	Partial	Not As Expected	Not As Expected
MMS Messages	Graphic	Partial	Partial	Partial	Not As Expected	Not As Expected
	Audio	Partial	Partial	Partial	Not As Expected	Not As Expected
	Video	Partial	Partial	Partial	Not As Expected	Not As Expected
Stand-alone Files	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	As Expected	As Expected	As Expected	As Expected	As Expected
	Video	As Expected	As Expected	As Expected	As Expected	As Expected

MOBILedit Forensic v8.6.0.20354						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android				
		Galaxy S6	Galaxy S6 Edge Plus	LG G4	Galaxy Tab-E	Galaxy Tab S2
Application Data	Documents (txt, pdf files)	As Expected	As Expected	As Expected	As Expected	As Expected
Social Media Data	Facebook	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Twitter	Partial	Not As Expected	Partial	Partial	Partial
	LinkedIn	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	Not As Expected	Not As Expected
Internet Data	Bookmarks	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	History	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
	Email	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
Non-Latin Character	Reported in native format	As Expected	As Expected	As Expected	As Expected	As Expected
Hashing	Case File/Individual Files	NA	NA	NA	NA	NA
Case File Data Protection	Modify Case Data	As Expected	As Expected	As Expected	As Expected	As Expected

Table 4: Android Mobile Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with MOBILedit Forensic v8.6.0.20354.

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

- Equipment / User Data (i.e., MSISDN) was not reported for all iOS devices.
- Documents (txt, pdf) were not acquired for all iOS devices.
- Partial social media related data i.e., profile information, graphics were reported for Facebook and Instagram for all iOS devices.
- Email and email related data was not reported for all iOS devices.

See Table 5 below for more details.

MOBILedit Forensic v8.6.0.20354						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS				
		iPhone 6	iPhone 6S	iPhone 6S Plus	iPad Mini	iPad Pro
Acquisition	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected
	Disrupted	As Expected	As Expected	As Expected	As Expected	As Expected
Reporting	Preview-Pane	As Expected	As Expected	As Expected	As Expected	As Expected
	Generated Reports	As Expected	As Expected	As Expected	As Expected	As Expected
Equipment/ User Data	IMEI	As Expected	As Expected	As Expected	As Expected	As Expected
	MEID/ESN	NA	NA	NA	NA	NA
	MSISDN	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
PIM Data	Contacts	As Expected	As Expected	As Expected	As Expected	As Expected
	Calendar	As Expected	As Expected	As Expected	As Expected	As Expected
	Memos/Notes	As Expected	As Expected	As Expected	As Expected	As Expected
Call Logs	Incoming	As Expected	As Expected	As Expected	NA	NA
	Outgoing	As Expected	As Expected	As Expected	NA	NA

MOBILedit Forensic v8.6.0.20354

MOBILedit Forensic v8.6.0.20354						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS				
		iPhone 6	iPhone 6S	iPhone 6S Plus	iPad Mini	iPad Pro
	Missed	As Expected	As Expected	As Expected	NA	NA
SMS Messages	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected
MMS Messages	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	As Expected	As Expected	As Expected	As Expected	As Expected
	Video	As Expected	As Expected	As Expected	As Expected	As Expected
Stand-alone Files	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	As Expected	As Expected	As Expected	As Expected	As Expected
	Video	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
Social Media Data	Facebook	Partial	Partial	Partial	Partial	Partial
	Twitter	As Expected	As Expected	As Expected	As Expected	As Expected
	LinkedIn	As Expected	As Expected	As Expected	As Expected	As Expected
	Instagram	Partial	Partial	Partial	Partial	Partial
Internet Data	Bookmarks	As Expected	As Expected	As Expected	As Expected	As Expected
	History	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
GPS Data	Coordinates/Geo-tagged	As Expected	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
Hashing	Case File/Individual Files	NA	NA	NA	NA	NA
Case File Data	Modify Case Data	As Expected	As Expected	As Expected	As Expected	As Expected

MOBILedit Forensic v8.6.0.20354						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS				
		iPhone 6	iPhone 6S	iPhone 6S Plus	iPad Mini	iPad Pro
Protection						

Table 5: iOS Mobile Devices

4.3 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with MOBILedit Forensic v8.6.0.20354.

All test cases pertaining to the acquisition of UICCs were successful with the exception of the following:

- Acquisition interruption did not produce an error message.
- Acquisition of the SPN and MSISDN were not reported.
- Acquisition of location related data (i.e., LOCI, GPRSLOCI) was not reported.
- Hash values were not present for vendor-supported data.

See Table 6 below for more details.

MOBILedit Forensic v8.6.0.20354		
Test Cases – UICC Acquisition		Universal Integrated Circuit Card
Connectivity	Non Disrupted	As Expected
	Disrupted	Not As Expected
Equipment/ User Data	Service Provider Name (SPN)	Not As Expected
	ICCID	As Expected
	IMSI	As Expected
	MSISDN	Not As Expected
PIM Data	Abbreviated Dialing Numbers (ADNs)	As Expected
	Last Numbers Dialed (LNDs)	As Expected
	SMS Messages	As Expected

MOBILedit Forensic v8.6.0.20354		
Test Cases – UICC Acquisition		<i>Universal Integrated Circuit Card</i>
	EMS Messages	<i>As Expected</i>
Location Related Data	LOCI	<i>Not As Expected</i>
	GPRSLOCI	<i>Not As Expected</i>
Acquisition	Acquire All	<i>As Expected</i>
	Selected All	<i>NA</i>
	Select Individual	<i>NA</i>
Case File Data Protection	Modify Case Data	<i>As Expected</i>
Password Protected SIM Acquire	Acquisition of Protected SIM	<i>As Expected</i>
PIN/PUK Attempts	PIN attempts reported	<i>As Expected</i>
	PUK attempts reported	<i>As Expected</i>
Non-ASCII Character	Non-ASCII characters	<i>As Expected</i>
Hashing	Hashes reported for acquired data objects	<i>NA</i>

Table 6: Universal Integrated Circuit Cards