



MOBILedit Forensic v7.8.3.6085

Test Results for Mobile Device Acquisition Tool

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**Homeland
Security**

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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 Web site (<http://www.cftt.nist.gov/>).

This document reports the results from testing MOBILedit Forensic v7.8.3.6085 across supported Android, iOS and Windows based devices. The images captured from the test runs are available at the CFReDS Web site (<http://www.cfreds.nist.gov/>).

Test results from other tools can be found on the DHS S&T Cyber Forensics web page, <http://www.dhs.gov/science-and-technology/nist-cftt-reports>.

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 and associated media. Section 4 provides an overview of the test case results reported by the tool. The full test data is available at http://www.cftt.nist.gov/mobile_devices.htm.

Test Results for Mobile Device Acquisition Tool

Tool Tested: MOBILedit Forensic
Software Version: v7.8.3.6085

Supplier: COMPELSON Labs

Address: 75 Broadway Suite 202
San Francisco, CA 94111

Tel: 415-361-4077
Email: feedback@MOBILedit.com
WWW: <http://www.MOBILedit.com>

1 Results Summary

Compelson Labs MOBILedit Forensic provides the ability to view, search or retrieve all data from a supported phone. This data includes call history, phonebook, text messages, multimedia messages, files, calendars, notes, reminders and raw application data. It will also retrieve all 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.

The tool was tested for its ability to acquire active data from the internal memory of supported mobile devices and UICCs. Except for the following anomalies, the tool acquired all supported data objects completely and accurately for all mobile devices tested.

Connectivity:

- Connectivity was not established. (Devices: *Nexus4, HTC Win, Nokia Lumia*)
- Acquisition interruption did not produce an error message. (Media: *UICCs*)

Data Preview / Generated reports:

- Data reported within the connected device preview was inconsistent with the generated report (i.e., application data, MMS message content, user files). (Devices: *Android devices, iOS devices*)

Equipment / Subscriber related data:

- Subscriber related data (i.e., MSISDN) was not reported. (Devices: *Android, iPhone 5, iPhone 5s*, Media: *UICCs*)
- Subscriber related data (i.e., SPN) was not reported. (Media: *UICCs*)

Personal Information Management (PIM) data:

- Acquisition of PIM Data (i.e., *memos*) was not reported for the Galaxy S5, Galaxy Note3 and the HTC One CDMA devices.

- Acquisition of PIM Data (i.e., *long memos*) was not reported for the Galaxy S3.
- Acquisition of PIM Data (i.e., *long memos*) was truncated for the Galaxy S4.
- MMS Messages are partially reported. (Devices: Android, iOS)

Call Logs:

- Missed calls were not reported. (Device: *iPhone 5*)

Application Data:

- Application related data was not acquired. (Devices: *iOS*)

Internet Related Data:

- Browser History and Bookmarks were not acquired. (Devices: *Galaxy S4, Galaxy Note 3, iOS*)

Social Media Data:

- Acquisition of social media data (i.e., *Facebook*) was not reported. (Devices: *Galaxy S5, HTC One CDMA*)
- Social media (i.e., Facebook, LinkedIn) data was not reported for the Galaxy S3, Galaxy S4 and the HTC One GSM.
- Partial social media (i.e., Facebook) data was reported for the Galaxy Note 3.

Hashing:

- Hash values for individually acquired files were not reported. (Devices: *Android, iOS*, Media: *UICCs*)

GPS/Location Related Data:

- Acquisition of GPS related data (i.e., longitude and latitude coordinates) were not reported. (Devices: *Android*)
- Acquisition of LOCI and GPRLOCI were not reported. (Media: *UICCs*)

For more test result details see section 4.

2 Mobile Devices

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

Make	Model	OS	Firmware	Network
Apple iPhone	5	iOS 6.1.4 (10B350)	3.04.25	GSM
Apple iPhone	5s	iOS 7.1 (11D167)	2.18.02	CDMA
Apple iPad	iPad 2 - MD065LL/A	iOS 6.1.3 (10B329)	04.12.05	GSM
Apple iPad	iPad Air - ME999LL/A	iOS 7.1 (11D167)	2.18.02	CDMA
Apple iPad Mini	iPad Mini - ME030LL/A	iOS 6.1.3 (10B329)	3.04.25	GSM
Apple iPad Mini	iPad Mini - MF075LL/A	iOS 7.0.4 (11B554a)	1.03.01	CDMA
Samsung Galaxy S3	SGH-1747	Android 4.1.2	1747UCDMG2	GSM
Samsung Galaxy S4	SGH-M919	Android 4.2.2	M919UVUAMD	GSM
Samsung Galaxy S5	SM-G900V	Android 4.2.2	G900V.05	CDMA
HTC One	HTCC6525LVW	Android 4.2.2	0.89.20.0222	GSM
HTC One	HTC One	Android 4.1.2	4A.17.3250.20_10.40.1150.04L	CDMA
Samsung Galaxy Note 3	SM-N900V	Android 4.3	N900V.07	CDMA
Nexus 4	Nexus 4	Android 4.3	JWR66Y	GSM
HTC Win 8x	HTC PM23300	Windows Phone 8.0	3030.0.34101.502	GSM
Nokia Lumia	920	Windows Phone 8.0	1232.5962.1314.0001	GSM

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 and UICCs.

3.1 Execution Environment

MOBILedit Forensic v7.8.3.6085 was installed on Windows 7 v6.1.7601.

3.2 Internal Memory Data Objects

MOBILedit Forensic 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-ASCII Entry</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-ASCII SMS/EMS</i>

Data Objects	Data Elements
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	
	<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>
Location Data	
	<i>GPS Coordinates</i>
Social Media Data	
	<i>Facebook</i>
	<i>Twitter</i>
	<i>LinkedIn</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>

Table 3: UICC Data Objects

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 v7.8.3.6085. Section 4.4 covers Universal Integrated Circuit Cards (UICCs).

The *Test Cases* column (internal memory acquisition/UICC) in sections 4.1 - 4.4 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 v7.8.3.6085.

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

- Connectivity was not established for Nexus 4.
- Inconsistencies of the data reported between the connected devices preview and the generated report exists for all Android devices (e.g., application data, files, MMS message content).
- Subscriber related data (i.e., MSISDN) were not reported for all Android devices.
- Acquisition of PIM Data (i.e., *memos*) was not reported for the Galaxy S5, Galaxy Note 3 and the HTC One CDMA devices.
- Acquisition of PIM Data (i.e., *long memos*) was not reported for the Galaxy S3.
- Acquisition of PIM Data (i.e., *long memos*) was truncated for the Galaxy S4.
- The textual portions of MMS messages are not reported in the generated report.
- MMS attachments (audio, video) and incoming graphic files cannot be opened in the connected devices preview for the Galaxy S3, Galaxy S4, Galaxy S5 and the Galaxy Note 3.
- MMS attachments (audio, video) cannot be opened in the connected devices preview for the HTC One GSM/CDMA devices.
- Internet related data (i.e., bookmarks, browsing history) was not reported for the Galaxy S4 and the Galaxy Note 3.
- Social media (i.e., Facebook, LinkedIn) data was not reported for the Galaxy S3, Galaxy S4 and the HTC One GSM.
- Social media (i.e., Facebook) data was not reported for the Galaxy S5 and the HTC One CDMA device.
- Partial social media (i.e., Facebook) data was reported for the Galaxy Note 3.
- Hash values were not present for individually acquired files for all Android devices.
- GPS related data was not acquired for all Android devices.

NOTES:

- A hash value for the overall case file is generated when exported the acquired data as a MOBILedit case (mec) file.

See Table 4 below for more details.

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Android</i>					
		Galaxy S3 <i>GSM</i>	Galaxy S4 <i>GSM</i>	Galaxy S5 <i>CDMA</i>	Galaxy Note 3 <i>CDMA</i>	HTC One <i>GSM</i>	HTC One <i>CDMA</i>
Connectivity	Non Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Reporting	Preview-Pane	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Generated Reports	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
Equipment/ User Data	IMEI	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>
	MSISDN	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
PIM Data	Contacts	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Calendar	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	To-Do List/ Tasks	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Memos	<i>Partial</i>	<i>Partial</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>
Call Logs	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Missed	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
SMS Messages	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
MMS Messages	Graphic	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Audio	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Video	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Graphic	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Android</i>					
		<i>Galaxy S3 GSM</i>	<i>Galaxy S4 GSM</i>	<i>Galaxy S5 CDMA</i>	<i>Galaxy Note 3 CDMA</i>	<i>HTC One GSM</i>	<i>HTC One CDMA</i>
Stand-alone Files	Audio	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Application Data	Documents	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Spreadsheets	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Presentations	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Internet Data	Bookmarks	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	History	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Social Media Data	Facebook	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Partial</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	Twitter	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	LinkedIn	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>
Acquisition	Acquire All	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>
	Selected All	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	Select Individual	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>
Case File Data Protection	Modify Case Data	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Physical Acquisition	Readability	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Deleted File Recovery	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Non-ASCII Character	Reported in native format	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Hashing	Hashes reported for acquired data objects	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
GPS Data	Coordinates (Long/Lat)	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>

Table 4: Android Mobile Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with MOBILedit Forensic v7.8.3.6085.

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

- Inconsistencies of the data reported between the connected devices preview and the generated report exists for all Android devices (e.g., application data, files, MMS message content).
- Subscriber related data (i.e., MSISDN) were not reported for the iPhone 5 GSM, and iPhone 5s CDMA.
- Missed calls were not reported for the iPhone5 GSM device.
- MMS attachments for audio, video, and graphic files are not reported with the textual portion of MMS messages in the connected devices preview or generated report for the iPhone 5 GSM, iPad GSM, iPad Mini GSM.
- MMS attachments for audio and video files are not reported with the textual portion of MMS messages in the connected devices for the iPhone 5s, iPad CDMA and the iPad Mini CDMA.
- Documents (text, pdf files) are not reported for all iOS devices.
- Internet related data (bookmarks, browsing history) are not reported for all iOS devices.
- Hash values were not present for individually acquired files for all iOS devices.

NOTES:

- iOS Notes are not reported in the connected devices preview. They are only reported within the iTunes backup.
- A hash value for the overall case file is generated when exported the acquired data as a MOBILedit case (mec) file.

See Table 5 below for more details.

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>					
		<i>iPhone 5 GSM</i>	<i>iPhone 5s CDMA</i>	<i>iPad GSM</i>	<i>iPad Air CDMA</i>	<i>iPad Mini GSM</i>	<i>iPad Mini CDMA</i>
Connectivity	Non Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Reporting	Preview-Pane	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Generated Reports	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
Equipment/ User Data	IMEI	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	MSISDN	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
PIM Data	Contacts	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Calendar	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	To-Do List/ Tasks	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Memos	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Call Logs	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Missed	<i>Not As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
SMS Messages	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
MMS Messages	Graphic	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Audio	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Video	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
Stand-alone Files	Graphic	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>

MOBILedit Forensic v7.8.3.6085							
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>					
		<i>iPhone 5 GSM</i>	<i>iPhone 5s CDMA</i>	<i>iPad GSM</i>	<i>iPad Air CDMA</i>	<i>iPad Mini GSM</i>	<i>iPad Mini CDMA</i>
Application Data	Documents	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	Spreadsheets	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Presentations	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Internet Data	Bookmarks	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	History	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
Social Media Data	Facebook	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Twitter	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	LinkedIn	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Acquisition	Acquire All	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	Selected All	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>
	Select Individual	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>
Case File Data Protection	Modify Case Data	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Physical Acquisition	Readability	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Deleted File Recovery	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Non-ASCII Character	Reported in native format	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Hashing	Hashes reported for acquired data objects	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
GPS Data	Coordinates (Long/Lat)	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>

Table 5: iOS Mobile Devices

4.3 Windows Based Devices

The internal memory contents for Windows 8.0 devices were acquired and analyzed with MOBILedit Forensic v7.8.3.6085.

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

- Connectivity was not established for the HTC Win or the Nokia Lumia.

See Table 6 below for more details.

NOTES:

- Connectivity is established to the HTC Win8 and Nokia Lumia, but no data is reported. When selecting Phonebook from the connected devices pane the following error occurs: Requested operation is not implemented in current version (00002AFD)

MOBILedit Forensic v7.8.3.6085			
Test Cases – Internal Memory Acquisition		<i>Mobile Devices Platforms: Windows 8</i>	
		HTC Win 8	Nokia Lumia
Connectivity	Non Disrupted	<i>Not As Expected</i>	<i>Not As Expected</i>
	Disrupted	NA	NA
Reporting	Preview-Pane	NA	NA
	Generated Reports	NA	NA
Equipment/ User Data	IMEI	NA	NA
	MEID/ESN	NA	NA
	MSISDN	NA	NA
PIM Data	Contacts	NA	NA
	Calendar	NA	NA
	To-Do List/ Tasks	NA	NA
	Memos	NA	NA
Call Logs	Incoming	NA	NA

	Outgoing	NA	NA
	Missed	NA	NA
SMS Messages	Incoming	NA	NA
	Outgoing	NA	NA
MMS Messages	Graphic	NA	NA
	Audio	NA	NA
	Video	NA	NA
Stand-alone Files	Graphic	NA	NA
	Audio	NA	NA
	Video	NA	NA
Application Data	Documents	NA	NA
	Spreadsheets	NA	NA
	Presentations	NA	NA
Internet Data	Bookmarks	NA	NA
	History	NA	NA
Social Media Data	Facebook	NA	NA
	Twitter	NA	NA
	LinkedIn	NA	NA
Acquisition	Acquire All	NA	NA
	Selected All	NA	NA
	Select Individual	NA	NA
Case File Data Protection	Modify Case Data	NA	NA
Physical Acquisition	Readability	NA	NA
	Deleted File Recovery	NA	NA
Non-ASCII Character	Reported in native format	NA	NA
Hashing	Hashes reported for acquired data objects	NA	NA
GPS Data	Coordinates (Long/Lat)	NA	NA

Table 6: Windows 8.0 devices

4.4 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with MOBILedit Forensic v7.8.3.6085.

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 7 below for more details.

MOBILedit Forensic v7.8.3.6085		
Test Cases – UICC Acquisition		<i>Universal Integrated Circuit Card</i>
Connectivity	Non Disrupted	<i>As Expected</i>
	Disrupted	<i>Not As Expected</i>
Equipment/ User Data	Service Provider Name (SPN)	<i>Not As Expected</i>
	ICCID	<i>As Expected</i>
	IMSI	<i>As Expected</i>
	MSISDN	<i>Not As Expected</i>
PIM Data	Abbreviated Dialing Numbers (ADNs)	<i>As Expected</i>
	Last Numbers Dialed (LNDs)	<i>As Expected</i>
	SMS Messages	<i>As Expected</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>

MOBILedit Forensic v7.8.3.6085		
Test Cases – UICC Acquisition		<i>Universal Integrated Circuit Card</i>
Non-ASCII Character	Non-ASCII characters	<i>As Expected</i>
Hashing	Hashes reported for acquired data objects	<i>Not As Expected</i>

Table 7: Universal Integrated Circuit Cards