Final Mobile Forensics v2017.02.06

Test Results for Mobile Device Acquisition Tool

June 17, 2017

Homeland Security

Science and Technology

Test Results for Mobile Device Acquisition Tool:
Final Mobile Forensics (FMF) v2017.02.06

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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 Final Mobile Forensics v2017.02.06 across supported mobile devices and associated media e.g., smart phones, feature phones, UICCs.

Test results from other tools can be found on the DHS S&T-sponsored digital 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 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 http://www.cftt.nist.gov/mobile_devices.htm.

Test Results for Mobile Device Acquisition Tool

Tool Tested:	Final Mobile Forensics
Software Version:	V2017.02.06
Supplier:	FINALDATA
Address:	5950 Canoga Ave. Suite 220 Woodland Hills, CA 91367
Tel:	(877) 612-2353
WWW:	http://www.finaldata.com

1 Results Summary

FINALDATA's Final Mobile Forensics captures and analyses various mobile device's data with the use of a database wizard for the acquisition procedure. Final Mobile Forensics engine is built to first reconstruct the acquired mobile device's file system, then parse the extracted data. Data is organized and searchable by categories of time, name, number, image size, keywords, etc.

Final Mobile Forensics was tested for its ability to acquire active data from the internal memory of supported mobile devices and associated media (i.e., smart phones, tablets, feature phones, UICCs/SIMs). 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 using Final Mobile Forensics recommended plugins. (Devices: *LG G4, LG G5, Motorola Droid Turbo 2, Google Pixel XL, Motorola DForce, HTC 10, Samsung Rugby III, LG Extravert, Kyocera Dura Vx, LG Exalt, LG Cosmos 3, LG Revere 3*)
- An error message is not generated when mobile device connectivity is disrupted during acquisition for all mobile devices.

Subscriber related data:
- The MSISDN is not reported. (Devices: *Galaxy S3, Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E, Galaxy Tab S2, iPhone 4*)

Personal Information Management (PIM) data:
- Metadata (i.e., graphics) for Address Book/Contact entries were not reported with the associated entry. (Devices: *Android devices*)
- Metadata (e.g., URLs, Address) for Address Book/Contact entries were not reported with the associated entry. (Devices: *Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E, Galaxy Tab S2, iPhone 5s, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Air, iPad Pro*)

- Memo entries were not reported. (Devices: *Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E, Galaxy Tab S2*)
- Long memo entries are truncated in the preview-pane. (Devices: *Galaxy S3, iPhone 6S Plus, iPad Mini, iPad Pro*)
- Memos are reported twice with a Status of active and deleted. (Devices: *iPhone 7, iPhone 7 Plus, iPad Air*)
- Phone numbers for Contact entries included in Group text messages (SMS, EMS) are not reported. (Device: *iPhone 6S Plus)*
- Phone numbers for Contact entries included in Group text messages (SMS, EMS) are reported as: PRIMARY KEY AUTOINCREMENT, guid TEXT UNIQUE NOT. (Devices: *iPhone 7, iPhone 7 Plus*)
- Call logs (incoming, outgoing, missed) are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Text messages (SMS, EMS) are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Audio and video attachments are not reported for incoming and outgoing MMS messages. (Device: *iPhone 4*)
- Video files associated with incoming MMS messages are not viewable within the preview-pane or when exported. (Device: *Galaxy S3*)
- Video files associated with outgoing MMS messages are not viewable, only the audio portion plays. (Device: *Galaxy S6 Edge Plus*)
- MMS attachments (i.e., audio, video, graphic files) are not reported with the associated incoming/outgoing MMS messages. (Devices: *Samsung J3, Samsung GS7, Samsung GS7 Edge*)

Stand-alone Files:
- Audio files are not reported. (Device: *iPhone 5S, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Air, iPad Pro*)
- Document files are not reported. (Devices: *iOS devices*)

Social media Data:
- Facebook, Twitter, LinkedIn, Instagram related data are not reported. (Devices: *Samsung J3, Samsung GS7, Samsung GS7 Edge*)
- LinkedIn, Instagram related data are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Facebook, Twitter, Linkedin related data are partially reported. (Device: *iPhone 5S*)
- Facebook and Instagram related data are not reported. (Devices: *iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Pro*)
- Facebook related data is not reported. (Device: *iPad Air*)
- LinkedIn related data is partially reported. (Device: *iPad Air*)

Internet Related Data:
- Internet related data (i.e., bookmarks, history, email) were not reported. (Devices: *Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E, Galaxy Tab S2*)
- Deleted bookmarks are reported with an incorrect Status of: Unknown. (Devices: *iPhone 7, iPhone 7 Plus*)
- Email related data is partially reported. (Devices: *iPhone 5S, iPad Air*)

- Email related data is not reported. (Devices: *iPhone 4, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Pro*)

GPS:
- GPS related data (i.e., longitude, latitude coordinates) was not reported. (Device: *Samsung GS7 Edge*)

Non-Latin Character Entries:
- Non-Latin character entries are not displayed in their native format. (Devices: *Galaxy S3, Galaxy S5, Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Note 3, Galaxy Tab-E, Galaxy Tab S2*)

UICCs:
- An error message is not generated when UICC connectivity is disrupted during acquisition.
- The Service Provider Name (SPN) or Mobile Station International Subscriber Directory Number (MSISDN) is not reported.
- Last Numbers Dialed (LND), SMS and EMS messages are not reported.
- LOCI and GPRSLOCI data is not reported.
- Acquisition of password protected UICCs does not allow the user to input the PIN. *Note: The only data reported is the ICCID.*
- The number of remaining PIN and PUK attempts are not provided.
- Non-Latin character entries are either not displayed in their native format or not reported.
- Abbreviated Dialing Numbers (ADNs) containing special characters (i.e., '@') are not reported.

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing Final Mobile Forensics v2017.02.06.

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	iOS 10.2 (14C92)	1.33.00	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	J3 – SM-J320V	Android 6.0.1	MMB29M.J320VVRU2AP12	CDMA
Google Pixel XL	XL	Android 7.1.1	NMF26U	CDMA
Samsung GS7	GS7 – SM-G930V	Android 6.0.1	MMB29M.G930VVRU4AP13	CDMA
Motorola	DForce 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	GS7 Edge SM-935V	Android 6.0.1	MMB29M.G935VVRS4APH1	CDMA

Make	Model	OS	Firmware	Network
Samsung Galaxy Note 3	SM-N900V	Android 4.4.2	KOT49H.N900VVRUCNC4	CDMA
Samsung Galaxy	Tab-E	Android 5.1.1	LMY47X.T567VVRU1AOH1	CDMA
Samsung Galaxy	Tab S2	Android 5.1.1	LMY47X.T817BVRU2AOJ2	CDMA
Samsung Rugby III	SGH-A997	A997UCMG1	REV0.2	GSM
LG Extravert	Extravert	VN28010A	REV1.0	CDMA
Kyocera	Dura Vx	BREW 1.0.4	3.819VZ	CDMA
LG Exalt 2	Exalt 2	NA	VN3701B	CDMA
LG Cosmos 3	Cosmos 3	BREW 1.0.2	VN251ZV6	CDMA
LG Revere 3	Revere 3	BREW 1.0.2	VN17011A	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

Final Mobile Forensics v2017.02.06 was installed on Windows 7 v6.1.7601.

3.2 Internal Memory Data Objects

Final Mobile Forensics v2017.02.06 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
	Outgoing SMS
	Incoming EMS – Read
	Incoming EMS – Unread
	Outgoing EMS
	Incoming SMS – Deleted
	Outgoing SMS – Deleted

Data Objects	Data Elements
Text Messages	*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 – 4.4 identify the mobile device operating system type, media (e.g., Android, iOS, Windows Mobile, UICC) and the make and model of mobile devices used for testing Final Mobile Forensics v2017.02.06.

The *Test Cases* column (internal memory acquisition) 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 Final Mobile Forensics v2017.02.06.

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

- Connectivity was not established to the following devices using Final Mobile Forensics recommended plugins: LG G4, LG G5, Motorola Droid Turbo 2, Google Pixel XL, Motorola DForce, HTC 10.
- An error message is not generated when mobile device connectivity is disrupted during data extraction.
- The MSISDN was not reported for the Galaxy S3, Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E and the Galaxy Tab S2.
- Graphic files associated with Contacts are not reported for all Android devices.
- Metadata (i.e., URLs) associated with Contact entries are not reported for the Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E, and the Galaxy Tab S2.
- Long memos are truncated after 880 characters for the Galaxy S3.
- Memo related data are not reported for the Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E and the Galaxy Tab S2.
- Incoming, outgoing, missed calls via Hangouts dialer are not reported for the Galaxy Tab-E or the Galaxy Tab S2.
- SMS and EMS text messages are not reported via Firechat for the Galaxy Tab-E or the Galaxy Tab S2.
- Video files associated with incoming video MMS messages are not viewable internally or when exported for the Galaxy S3.
- Video files associated with outgoing video MMS messages are not viewable. Only the audio portion of the video for the Galaxy S6 Edge Plus.
- MMS attachments (i.e., audio, video, graphic files) are not reported with the associated incoming/outgoing MMS messages for the Samsung J3, Samsung GS7 and the Samsung GS7 Edge.
- Social media related data (i.e., Facebook, Twitter, LinkedIn, Instagram) are not reported for the Samsung J3, Samsung GS7, and the Samsung GS7 Edge.
- Social media related data (i.e., LinkedIn, Instagram) are not reported for the Galaxy Tab-E and the Galaxy Tab S2.
- Internet related data (i.e., Bookmarks, Internet History, Email) are not reported for the Samsung J3, Samsung GS7, Samsung GS7 Edge, Galaxy Tab-E and the Galaxy Tab S2.
- GPS related data is not reported for the Samsung GS7 Edge.
- Non-Latin character entries are not displayed in their native format for the Galaxy S3 (Chinese character set, in the preview-pane and generated report), Galaxy S5, Galaxy S6 Edge Plus, Samsung J3, Samsung GS7, (in the generated report), Samsung GS7 Edge, Galaxy Note 3, Galaxy Tab-E and the Galaxy Tab S2 (in the preview-pane and generated report).

See Table 3 below for more details.

					Mobile Device Platform: Android				
Final Mobile Forensics v2017.02.06										
Test Cases – Internal Memory Acquisition		Galaxy S3	Galaxy S5	Galaxy S6 Edge Plus	Samsung J3	Samsung GS7	Samsung GS7 Edge	Galaxy Note 3	Galaxy Tab-E	Galaxy Tab S2
Acquisition	Acquire All	As Expected	As Expected	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	Not As Expected	Not As Expected
Reporting	Preview-Pane	As Expected	As Expected	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	As Expected	As Expected
Equipment/ User Data	IMEI	As Expected	As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	As Expected	Not As Expected	Not As Expected
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MSISDN	Not As Expected	As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	As Expected	Not As Expected	Not As Expected
PIM Data	Contacts	Partial	Partial	Partial	Partial	Partial	Partial	Partial	Partial	Partial
	Calendar	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Memos/Notes	Partial	As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	As Expected	Not As Expected	Not As Expected
Call Logs	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Missed	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
SMS Messages	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
MMS Messages	Graphic	As Expected	As Expected	As Expected	Partial	Partial	Partial	As Expected	Not As Expected	Not As Expected
	Audio	As Expected	As Expected	As Expected	Partial	Partial	Partial	As Expected	Not As Expected	Not As Expected
	Video	Partial	As Expected	Partial	Partial	Partial	Partial	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	As Expected	As Expected
	Audio	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Video	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Application Data	Documents (txt, pdf files)	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected

Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android								
		Galaxy S3	Galaxy S5	Galaxy S6 Edge Plus	Samsung J3	Samsung GS7	Samsung GS7 Edge	Galaxy Note 3	Galaxy Tab-E	Galaxy Tab S2
Social Media Data	Facebook	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*As Expected*	*As Expected*
	Twitter	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*As Expected*	*As Expected*
	LinkedIn	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	Instagram	*NA*	*NA*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*	*Not As Expected*
Internet Data	Bookmarks	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	History	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	Email	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
GPS Data	Coordinates/ Geo-tagged	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*As Expected*	*As Expected*	*As Expected*
Non-Latin Character	Reported in native format	*Not As Expected*	*Partial*	*Partial*	*Partial*	*Partial*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Hashing	Case File/ Individual Files	*As Expected*	*As Expected*	*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*	*As Expected*	*As Expected*

Table 3: Android Mobile Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with Final Mobile Forensics v2017.02.06.

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 generated when mobile device connectivity is disrupted during data extraction.
- The MSISDN / MIN was not reported for the iPhone 4.
- Metadata (i.e., street address, city, state, URLs) associated with Contact entries are not reported for the iPhone 5s, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Air, and the iPad Pro.
- Long memos are truncated after 67 characters for the iPhone 6S Plus, iPad Mini, and the iPad Pro.
- Memos are reported twice with a Status of active and deleted for the iPhone 7, iPhone 7 Plus, and the iPad Air.
- Contacts (i.e., phone numbers) are not reported for Group SMS/EMS text messages are reported for the iPhone 6S Plus. For the the iPhone 7, iPhone 7 Plus the Contacts are reported as: PRIMARY KEY AUTOINCREMENT, guid TEXT UNIQUE NOT.
- Audio and video attachments are not reported for incoming and outgoing MMS messages for the iPhone 4.
- Stand-alone audio files are not reported for the iPhone 5s, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini, iPad Air and the iPad Pro.
- Stand alone documents (txt, pdf files) are not reported for all iOS devices.
- Social media related data (i.e., Facebook, Twitter, LinkedIn) is partially reported (e.g., profile information, emoticons, graphic files) for the iPhone 5S.
- Social media related data (i.e., Facebook and Instagram) are not reported for the iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini and the iPad Pro.
- Social media related data (i.e., Facebook) is not reported for the iPad Air.
- Social media related data (i.e., LinkedIn) is partially reported for the iPad Air.
- Deleted bookmarks are reported with an incorrect Status of: Unknown for the iPhone 7 and iPhone 7 Plus.
- Email related data is partially reported for the iPhone 5S and the iPad Air.
- Email related data is not reported for the iPhone 4, iPhone 6S Plus, iPhone 7, iPhone 7 Plus, iPad Mini and the iPad Pro.

See Table 4 below for more details.

Final Mobile Forensics v2017.02.06									
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS							
		iPhone 4	iPhone 5S	iPhone 6S Plus	iPhone 7	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	As Expected
	Disrupted	Not As Expected	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	As Expected
	Generated Reports	As Expected	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	As Expected
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA	NA
	MSISDN	Not As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
PIM Data	Contacts	As Expected	Partial	Partial	Partial	Partial	Partial	Partial	Partial
	Calendar	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Memos/Notes	As Expected	As Expected	Partial	Partial	Partial	Partial	Partial	Partial
Call Logs	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Missed	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
SMS Messages	Incoming	As Expected	As Expected	Partial	Partial	Partial	As Expected	As Expected	Partial
	Outgoing	As Expected	As Expected	Partial	Partial	Partial	As Expected	As Expected	Partial
MMS Messages	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	Partial	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Video	Partial	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Stand-alone Files	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Audio	As Expected	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	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	Not As Expected

Final Mobile Forensics v2017.02.06								
		Mobile Device Platform: iOS						
Test Cases – Internal Memory Acquisition		iPhone 4	iPhone 5S	iPhone 6S Plus	iPhone 7	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
Social Media Data	Facebook	*NA*	*Partial*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Twitter	*NA*	*Partial*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	LinkedIn	*NA*	*Partial*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*Partial*	*As Expected*
	Instagram	*NA*	*NA*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*NA*	*Not As Expected*
Internet Data	Bookmarks	*As Expected*	*As Expected*	*As Expected*	*Partial*	*Partial*	*As Expected*	*As Expected*	*As Expected*
	History	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Email	*Not As Expected*	*Parital*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Partial*	*Not As Expected*
GPS Data	Coordinates/ Geo-tagged	*As Expected*	*As Expected*	*As Expected*	*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*	*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*	*As Expected*
Case File Data Protection	Modify Case Data	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*

Table 4: iOS Mobile Devices

4.3 Feature Devices

The internal memory contents for the feature phone was acquired and analyzed with Final Mobile Forensics v2017.02.06.

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

- Connectivity was not established to the following devices using Final Mobile Forensics recommended plugins: Samsung Rugby III, LG Extravert, Kyocera Dura Vx, LG Exalt 2, LG Cosmos 3, LG Revere 3.

4.4 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with Final Mobile Forensics v2017.02.06.

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

- An error message is not generated when connectivity is disrupted by removing the UICC from the PC/SC reader during data extraction.
- The Service Provider Name (SPN) nor Mobile Station International Subscriber Directory Number (MSISDN) are reported.
- Last Numbers Dialed (LND), SMS and EMS messages are not reported.
- LOCI and GPRSLOCI related data are not reported.
- Acquisition of a password protected SIM does not prompt the user to input the PIN, the only data reported is the ICCID.
- The number of remaining PIN and PUK attempts are not provided.
- Non-Latin characters entries are either not displayed in their native format (i.e., Chinese character sets) or not reported (i.e., Aurélien).
- Abbreviated Dialing Numbers (ADNs) containing special characters (e.g., '@' are not reported.

See Table 5 below for more details.

Final Mobile Forensics v2017.02.06		
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)	*Partial*
	Last Numbers Dialed (LNDs)	*Not As Expected*
	SMS Messages	*Not As Expected*
	EMS Messages	*Not As Expected*
Location Related Data	LOCI	*Not As Expected*
	GPRSLOCI	*Not As Expected*
Acquisition	Acquire All	*As Expected*
	Selected All	*NA*
	Select Individual	*NA*
Case File Data Protection	Modify Case Data	*As Expected*
Password Protected SIM Acquire	Acquisition of Protected SIM	*Not As Expected*
PIN/PUK Attempts	PIN attempts reported	*Not As Expected*
	PUK attempts reported	*Not As Expected*
Non-ASCII Character	Non-ASCII characters	*Not As Expected*
Hashing	Hashes reported for acquired data objects	*As Expected*

Table 5: Universal Integrated Circuit Cards