



Final Mobile Forensics v2018.02.07

Test Results for Mobile Device Acquisition Tool

July 29, 2018



**Homeland
Security**

Science and Technology

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July 2018

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Final Mobile Forensics v2018.02.07

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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 Final Mobile Forensics v2018.02.07 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](#).

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 the [NIST website](#).

Test Results for Mobile Device Acquisition Tool

Tool Tested:	Final Mobile Forensics
Software Version:	v2018.02.07
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:

- An error message is not generated when mobile device connectivity is disrupted during acquisition for all mobile devices.

Subscriber and Equipment related data:

- The IMEI is not reported. (Devices: *Android*)
- The IMEI and MSISDN are not reported. (Devices: *LG Cosmos 3, LG Revere 3*)

Personal Information Management (PIM) data:

- Metadata (i.e., graphic files, URLs) associated with Contacts are not reported. (Devices: *Android*)
- Calendar related data is not reported. (Device: *LG Revere 3*)
- Memo related data is not reported. (Device: *LG Revere 3*)
- Metadata (i.e., URLs) associated with Contact and Calendar entries are not reported with the normalized data. (Devices: *iPhone 5S, iPhone 6S Plus, iPhone 7 Plus, iPad Mini, iPad Air, iPad Pro*)
- Call logs (i.e., hangouts dialer) are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Memo data is not reported. (Devices: *Galaxy S5, LG G4, LG G5, Galaxy S6 Edge Plus and Samsung J3*)

- SMS and MMS messages (i.e., FireChat) are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- SMS group messages do not contain all contact entries. (Devices: *LG G5, Samsung J3*)
- Audio and video attachments are not reported with the textual portion of MMS messages. (Device: *iPhone 4*)
- Outgoing MMS video attachments are not reported. (Device: *Galaxy S5*)
- Incoming MMS audio attachments are not reported with the associated text. (Device: *LG G4*)
- MMS attachments (i.e., audio, graphic, video) are not reported. (Devices: *LG G5, Samsung J3*)

Social media Data:

- LinkedIn is partially reported (e.g., account information). (Devices: *Galaxy S3, Galaxy S5*)
- Twitter is partially reported (e.g., account information). (Devices: *LG G4, LG G5*)
- Facebook and LinkedIn are partially reported (e.g., account information, contacts, emoticons, graphic files). (Device: *iPhone 5S*)
- LinkedIn and Instagram are not reported. (Devices: *LG G4, LG G5*)
- Facebook, Twitter and Instagram are partially reported (e.g., account information, contacts, emoticons, graphic files). (Devices: *iPhone 6S Plus, iPhone 7 Plus, iPad Mini, iPad Air, iPad Pro*)
- Facebook, Twitter, LinkedIn, Instagram are not reported. (Devices: *Galaxy S6 Edge Plus, Samsung J3*)
- LinkedIn is not reported. (Device: *Galaxy Note 3*)
- Twitter, LinkedIn and Instagram are not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)

Internet Related Data:

- Bookmarks are not reported. (Device: *Galaxy S5*)
- Bookmarks and History are not reported. (Devices: *LG G4, LG G5, Galaxy S6 Edge Plus, Galaxy Tab-E, Galaxy Tab S2, LG Cosmos 3, LG Revere 3*)

GPS:

- GPS related data (i.e., longitude, latitude coordinates) was not reported. (Devices: *LG G4, LG G5, Galaxy S6 Edge Plus, Samsung J3, Galaxy Note 3, Galaxy Tab-E, Galaxy Tab S2, iPad Mini, iPad Air, iPad Pro*)

Non-Latin Character Entries:

- Address book entries containing non-Latin character entries are not displayed in their native format. (Devices: *LG Cosmos 3, LG Revere 3*)

Case File Data Protection:

- A warning message is not produced when modifying and re-opening case file data (i.e., table data) for all Android, iOS, feature devices and UICCs.

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 v2018.02.07.

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
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
Samsung GS7 Edge	GS7 Edge SM-935V	Android 6.0.1	MMB29M.G935VVRS4APH1	CDMA
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
Blackberry Z10	STL100-4	10.2.1.2122	672849	CDMA
Blackberry Z30	STA100-3	10.3.2.556	85718	CDMA
LG Exalt 2	Exalt 2	NA	VN3701B	CDMA

Make	Model	OS	Firmware	Network
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 v2018.02.07 was installed on Windows 7 v6.1.7601.

3.2 Internal Memory Data Objects

Final Mobile Forensics v2018.02.07 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; Memos	<i>Regular Length</i>
	<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>

Data Objects	Data Elements
Text Messages	<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	<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

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 v2018.02.07.

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 v2018.02.07.

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

- An error message is not generated when mobile device connectivity is disrupted during data extraction for all Android devices.
- Equipment related data (i.e., IMEI) is not reported for all Android devices.
- Metadata (i.e., graphic files, URLs) associated with Contacts are not reported for all Android devices.
- Call logs (i.e., hangouts dialer) are not reported for the Galaxy Tab-E and Galaxy Tab S2.
- Memo data is not reported for the Galaxy S5, LG G4, LG G5, Galaxy S6 Edge Plus and Samsung J3.
- SMS and MMS messages (i.e., FireChat) are not reported for the Galaxy Tab-E and Galaxy Tab S2.
- SMS group messages do not contain all contact entries for the LG G5 and Samsung J3.
- Outgoing MMS video attachments are not reported for the Galaxy S5.
- Incoming MMS audio attachments are not reported with the associated text for the LG G4.
- MMS attachments (i.e., audio, graphic, video) are not reported for the LG G5 and Samsung J3.
- Social media related data (i.e., LinkedIn) is partially reported (e.g., account information) for the Galaxy S3 and Galaxy S5.
- Social media related data (i.e., Twitter) is partially reported (e.g., account information) for the LG G4 and LG G5.
- Social media related data (i.e., LinkedIn, Instagram) is not reported for the LG G4 and LG G5.
- Social media related data (i.e., Facebook, Twitter, LinkedIn, Instagram) is not reported for the Galaxy S6 Edge Plus and Samsung J3.
- Social media related data (i.e., LinkedIn) is not reported for the Galaxy Note 3.
- Social media related data (i.e., Twitter, LinkedIn, Instagram) is not reported for the Galaxy Tab-E and Galaxy Tab S2.
- Internet related data (i.e., Bookmarks) are not reported for the Galaxy S5.
- Internet related data (i.e., Bookmarks, History) are not reported for the LG G4, LG G5, Galaxy S6 Edge Plus, Galaxy Tab-E and Galaxy Tab S2.
- GPS related data is not reported for the LG G4, LG G5, Galaxy S6 Edge Plus, Samsung J3, Galaxy Note 3, Galaxy Tab-E and Galaxy Tab S2.
- Case file data (i.e., table data) is modified and re-opened without error or warning of modification for all Android devices.

See Table 3 below for more details.

Final Mobile Forensics v2018.02.07

Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android								
		Galaxy S3	Galaxy S5	LG G4	LG G5	Galaxy S6 Edge Plus	Samsung J3	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	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
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MSISDN	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	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	As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	As Expected	As Expected	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	Partial	As Expected	Partial	As Expected	Not As Expected	Not As Expected
	Outgoing	As Expected	As Expected	As Expected	Partial	As Expected	Partial	As Expected	Not As Expected	Not As Expected
MMS Messages	Graphic	As Expected	As Expected	As Expected	Partial	As Expected	Partial	As Expected	Not As Expected	Not As Expected
	Audio	As Expected	As Expected	Partial	Partial	As Expected	Partial	As Expected	Not As Expected	Not As Expected
	Video	As Expected	Partial	As Expected	Partial	As Expected	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

Final Mobile Forensics v2018.02.07

Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Android</i>								
		Galaxy S3	Galaxy S5	LG G4	LG G5	Galaxy S6 Edge Plus	Samsung J3	Galaxy Note 3	Galaxy Tab-E	Galaxy Tab S2
Social Media Data	Facebook	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not 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>Partial</i>	<i>Partial</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	LinkedIn	<i>Partial</i>	<i>Partial</i>	<i>Not As Expected</i>						
	Instagram	<i>NA</i>	<i>NA</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>NA</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
Internet Data	Bookmarks	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	History	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	Email	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
GPS Data	Coordinates/Geo-tagged	<i>As Expected</i>	<i>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>	<i>Not As Expected</i>	<i>Not As Expected</i>
Non-Latin 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>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Hashing	Case File/Individual Files	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Case File Data Protection	Modify Case Data	<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>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>

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 v2018.02.07.

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 for all iOS devices.
- Metadata (i.e., URLs) associated with Contact and Calendar entries are not reported with the normalized data for the iPhone 5S, iPhone 6S Plus, iPhone 7 Plus, iPad Mini, iPad Air and iPad Pro.
- Audio and video attachments are not reported with the textual portion of MMS messages for the iPhone 4.
- Social media related data (i.e., Facebook, LinkedIn) is partially reported (e.g., account information, contacts, emoticons, graphic files) for the iPhone 5S.
- Social media related data (i.e., Facebook, Twitter, Instagram) is partially reported (e.g., account information, contacts, emoticons, graphic files) for the iPhone 6S Plus, iPhone 7 Plus, iPad Mini, iPad Air and iPad Pro.
- GPS related data is not reported for the iPad Mini, iPad Air and iPad Pro.
- Case file data (i.e., table data) is modified and re-opened without error or warning of modification for all iOS devices.

See Table 4 below for more details.

Final Mobile Forensics v2018.02.07								
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 <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>
	Disrupted	Not As <i>Expected</i>	Not As <i>Expected</i>	Not As <i>Expected</i>	Not As <i>Expected</i>	Not As <i>Expected</i>	Not As <i>Expected</i>	Not As <i>Expected</i>
Reporting	Preview-Pane	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>
	Generated Reports	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>
Equipment/ User Data	IMEI	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA
	MSISDN	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>
PIM Data	Contacts	As <i>Expected</i>	Partial	Partial	Partial	Partial	Partial	Partial

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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
PIM Data	Calendar	<i>As Expected</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Memos/Notes	<i>As Expected</i>	<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>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Missed	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</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>	<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>	<i>As Expected</i>
MMS Messages	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>	<i>As Expected</i>
	Audio	<i>Partial</i>	<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>Partial</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</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>	<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>	<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>	<i>As Expected</i>
Application Data	Documents (txt, pdf files)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data	Facebook	<i>NA</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Twitter	<i>NA</i>	<i>As Expected</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	LinkedIn	<i>NA</i>	<i>Partial</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Instagram	<i>NA</i>	<i>NA</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
Internet Data	Bookmarks	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	History	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Email	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
GPS Data	Coordinates/Geo-tagged	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>

Final Mobile Forensics v2018.02.07

Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>						
		iPhone 4	iPhone 5S	iPhone 6S Plus	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
Non-Latin 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>	<i>As Expected</i>
Hashing	Case File/ Individual Files	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Case File Data Protection	Modify Case Data	<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>	<i>Not As Expected</i>

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 v2018.02.07.

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

- An error message is not generated when connectivity is disrupted by removing the cable from the LG Cosmos 3 and LG Revere 3 during data extraction.
- Subscriber and equipment related data (i.e., MSISDN, IMEI) are not reported for the LG Cosmos 3 and the LG Revere 3.
- Address book entries containing non-Latin characters are not displayed in their native format for the LG Cosmos 3 and LG Revere 3.
- Calendar related data is not reported for the LG Revere 3.
- Memo related data is not reported for the LG Revere 3.
- Internet related data (i.e., bookmarks, history) are not reported for the LG Cosmos 3 and LG Revere 3.
- Case file data (i.e., table data) is modified and re-opened without error or warning of modification for the LG Cosmos 3 and the LG Revere 3.

See Table 5 below for more details.

Final Mobile Forensics v2018.02.07			
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Feature Phones</i>	
		<i>LG Cosmos3</i>	<i>LG Revere 3</i>
Acquisition	Acquire All	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>Not As Expected</i>	<i>Not As Expected</i>
Reporting	Preview-Pane	<i>As Expected</i>	<i>As Expected</i>
	Generated Reports	<i>As Expected</i>	<i>As Expected</i>
Equipment/ User Data	IMEI	<i>Not As Expected</i>	<i>Not As Expected</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>
	MSISDN	<i>Not As Expected</i>	<i>Not As Expected</i>
PIM Data	Contacts	<i>Partial</i>	<i>Partial</i>

Final Mobile Forensics v2018.02.07

Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Feature Phones</i>	
		LG Cosmos3	LG Revere 3
PIM Data	Calendar	<i>As Expected</i>	<i>Not As Expected</i>
	Memos/Notes	<i>As Expected</i>	<i>Not As Expected</i>
Call Logs	Incoming	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>
	Missed	<i>As Expected</i>	<i>As Expected</i>
SMS Messages	Incoming	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>
MMS Messages	Graphic	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>
Stand-alone Files	Graphic	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>
Application Data	Documents (txt, pdf files)	<i>NA</i>	<i>NA</i>
Social Media Data	Facebook	<i>NA</i>	<i>NA</i>
	Twitter	<i>NA</i>	<i>NA</i>
	LinkedIn	<i>NA</i>	<i>NA</i>
	Instagram	<i>NA</i>	<i>NA</i>
Internet Data	Bookmarks	<i>Not As Expected</i>	<i>Not As Expected</i>
	History	<i>Not As Expected</i>	<i>Not As Expected</i>
	Email	<i>NA</i>	<i>NA</i>

Final Mobile Forensics v2018.02.07			
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Feature Phones</i>	
		LG Cosmos3	LG Revere 3
GPS Data	Coordinates/Geo-tagged	<i>NA</i>	<i>NA</i>
Non-Latin Character	Reported in native format	<i>Not As Expected</i>	<i>Not As Expected</i>
Hashing	Case File/Individual Files	<i>As Expected</i>	<i>As Expected</i>
Case File Data Protection	Modify Case Data	<i>Not As Expected</i>	<i>Not As Expected</i>

Table 5: Feature Phones

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 v2018.02.07.

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.
- Case file data (i.e., table data) is modified and re-opened without error or warning of modification.

See Table 6 below for more details.

Final Mobile Forensics v2018.02.07		
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>Partial</i>
	Last Numbers Dialed (LNDs)	<i>Not As Expected</i>
	SMS Messages	<i>Not As Expected</i>

Final Mobile Forensics v2018.02.07		
Test Cases – UICC Acquisition		<i>Universal Integrated Circuit Card</i>
PIM Data	EMS Messages	<i>Not 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>Not As Expected</i>
Password Protected SIM Acquire	Acquisition of Protected SIM	<i>Not As Expected</i>
PIN/PUK Attempts	PIN attempts reported	<i>Not As Expected</i>
	PUK attempts reported	<i>Not As Expected</i>
Non-ASCII Character	Non-ASCII characters	<i>Not As Expected</i>
Hashing	Hashes reported for acquired data objects	<i>As Expected</i>

Table 6: Universal Integrated Circuit Cards