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Test Results for Mobile Device Acquisition Tool:
UFED4PC v7.45.1.43 – Physical Analyzer v7.47.0.49

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Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the Department of Homeland Security (DHS) Science and Technology Directorate, the National Institute of Justice (NIJ), and the National Institute of Standards and Technology (NIST) Special Programs Office 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 DHS'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 (<https://www.cftt.nist.gov/>).

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This document reports the results from testing Cellebrite UFED4PC v7.45.1.43 and Physical Analyzer v7.47.0.49 across supported mobile devices and associated media e.g., smart phones, tablets and 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.

Test Results for Mobile Device Acquisition Tool

Tool Tested: UFED4PC, Physical Analyzer

Software Version: v7.45.1.43 (UFED4PC), v7.47.0.49 (PA)

Supplier: Cellebrite, Inc.

Address: 7 Campus Drive, Suite 210, Parsippany, NJ 07054

Fax: (415) 361-4077

WWW: cellebrite.com

1 Results Summary

Cellebrite's UFED4PC v7.45.1.43 and Physical Analyzer v7.47.0.49 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, UICCs/SIMs).

The data reported for the devices below varies based upon the data extraction technique supported. For instance, a physical and/or file system extraction will provide the user with more data than a logical extraction. Each supported data extraction technique was performed. Except for the following anomalies, the tool acquired all supported data objects completely and accurately for all mobile devices tested.

Personal Information Management (PIM) data:

- Graphic files associated with an Address Book entry are not reported. (Devices: *Galaxy S5, Motorola Z Force, Motorola G5 Plus, Motorola X Pure Edition, Google Pixel 2, HTC U11, Google Pixel XL, Galaxy S9, Sony Xperia*)
- Memo/Notes are not reported. (Devices: *Galaxy S5, Motorola Droid Turbo 2, HTC 10*)

MMS Messages:

MMS attachments are not viewable (i.e., audio, graphic, video). (Devices: *Galaxy S5, Galaxy S9*)

Stand-alone files:

Document files are not reported. (Device: *iPhone 5S*)

Social media Data:

Social media related data (i.e., Twitter, LinkedIn) is not reported. (Device: *Galaxy S5*)

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing UFED4PC v7.45.1.43/Physical Analyzer v7.47.0.49.

Make	Model	OS	Extraction Type	Firmware	Network
Apple iPhone	5S	iOS 7.1 (11D167)	Logical	2.18.02	CDMA
Apple iPhone	6S Plus	iOS 9.2.1 (13C75)	Advanced Logical File System (ALFS)	1.23.00	CDMA
Apple iPhone	7	iOS 10.2 (14C92)	ALFS	1.33.00	CDMA
Apple iPhone	8 Plus	iOS 11.4.1 (15G77)	ALFS	1.89.00	CDMA
Apple iPhone	X	iOS 11.3.1 (15E302)	ALFS	1.89.00	CDMA
Apple iPad	Air	iOS 11.2.1 (11D167)	ALFS	2.18.02	CDMA
Apple iPad	Mini	iOS 11.3.1 (15E302)	ALFS	4.52.00	CDMA
Samsung Galaxy	S5 SM-G900V	Android 4.2.2	Physical Advanced ADB (PA_ADB), Advanced Logical (AL), Android Backup (AB)	G900V.05	CDMA
LG G4	VS986	Android 5.1	PA_ADB	LMY47D	CDMA
Motorola Droid	Turbo2	Android 5.1.1	PA_ADB	LCK23.130-23	CDMA
HTC 10	HTC6545LVW	Android 6.0.1	PA_ADB	1.85.605.8.8.0 g CL774095	CDMA
Samsung GS7 Edge	GS7 Edge SM-G935V	Android 6.0.1	PA_ADB	MMB29M.G935VVRS4APH1	CDMA
Samsung J3	J3 – SM-J320V	Android 6.0.1	PA_ADB	MMB29M.J320VVURU2AP12	CDMA
Motorola	Z Force XT1650	Android 7.0	AL, AB	NCLS25.86-11-4	CDMA
Moto	G5Plus	Android 7.0	AL, AB	NPNS25137924	CDMA
Moto	X Pure Edition	Android 7.0	AL, AB	25.211.1	CDMA
Google	Pixel 2		AL, AB		
HTC U11	U11	Android 7.1.1	AL, File System (FS)	12861730	CDMA
Google	Pixel XL	Android 7.1.1	AL, AB, FL	NMF26U	CDMA

Make	Model	OS	Extraction Type	Firmware	Network
Samsung Galaxy	S9	Android 8.0.0	AL, AB	G960U1UEU1 ARB7	CDMA
Sony	Experia (G8342)	Android 8.0.0	AL, FS	471A2324	CDMA
Samsung	Galaxy Note 8	Android 7.1.1	AL	G960U1UEU1 ARB7	CDMA
Samsung	Tab S2	Android 5.1.1	PA_ADB	LMY47X.T81 7BVRU2AOJ2	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

Cellebrite’s UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49 was installed on Windows 10 Pro version 10.0.14393.

3.2 Internal Memory Data Objects

Cellebrite’s UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49 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>

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

Table 2: Internal Memory Data Objects

4 Test Results

This section provides the test cases results reported by the tool. Sections 4.1 – 4.3 identify the mobile device operating system type, media (e.g., Android, iOS, UICC) and the make and model of mobile devices used for testing Cellebrite’s UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49.

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 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 UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49. All test cases pertaining to the acquisition of supported Android devices were successful with the exception of the following.

- Graphic files associated with an Address Book entry are not reported for the Galaxy S5, Motorola Z Force, Motorola G5 Plus, Motorola X Pure Edition, Google Pixel 2, HTC U11, Google Pixel XL, Galaxy S9 and Sony Experia.
- Memo v1.0.925.351 data is not reported for the Galaxy S5.
- Notepad v1.4.08 data is not reported for the Motorola Droid Turbo 2.
- Notepad 1.5.09 data is not reported for the HTC 10.
- MMS related data attachments (i.e., audio, graphic, video) are not reported for the Galaxy S5 and Galaxy S9.
- Social media related data (i.e., Twitter, LinkedIn) is not reported for the Galaxy S5.

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

Internal Memory Acquisition
UFED4PC v7.45.1.43 v7.47.049
Mobile Device Platform: Android

Test Cases:	Galaxy S5	LG G4	Motorola Droid Turbo 2	HTC 10	Samsung GS7 Edge	Samsung J3	Motorola Z Force
Acquisition Acquire All	<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>
Acquisition 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>	<i>As Expected</i>
Reporting Preview-Pane	<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>
Reporting Generated Reports	<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>
Equipment/ User Data IMEI/ MEID/ESN	<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>
Equipment/ User Data MSISDN	<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>
PIM Data Contacts	<i>Partial</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Partial</i>
PIM Data 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>	<i>As Expected</i>
PIM Data Memos/ Notes	<i>Not 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>NA</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>	<i>As Expected</i>
Call Logs 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>
Call Logs 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>	<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>	<i>As Expected</i>
SMS Messages 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>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>
MMS Messages 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>
MMS Messages 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>
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>	<i>As Expected</i>

Test Cases:	Galaxy S5	LG G4	Motorola Droid Turbo 2	HTC 10	Samsung GS7 Edge	Samsung J3	Motorola Z Force
Stand-alone Files 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>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>
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>	<i>NA</i>
Social Media Data Twitter	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data LinkedIn	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data Instagram	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
Social Media Data Pinterest	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data SnapChat	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data WhatsApp	<i>NA</i>	<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>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Internet Data 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>NA</i>
Internet Data 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>NA</i>
GPS Data Coordinates/Geo-tagged	<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>
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>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>
SQLite Data Report Active 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>	<i>As Expected</i>
SQLite Data Run SQLite Commands	<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>

Table 3a: Android Devices

Test Cases:	Galaxy S5	LG G4	Motorola Droid Turbo 2	HTC 10	Samsung GS7 Edge	Samsung J3	Motorola Z Force
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>
Acquisition Disrupted	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>
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>
Reporting 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/ MEID/ESN	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 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	<i>Partial</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	<i>Partial</i>
PIM Data Calendar	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 Memos/ Notes	<i>Not As Expected</i>	As <i>Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	As <i>Expected</i>	As <i>Expected</i>	NA
Call Logs Incoming	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>
Call Logs Outgoing	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>
Call Logs Missed	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>
SMS Messages Incoming	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>
SMS Messages Outgoing	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>
MMS Messages Graphic	<i>Partial</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>
MMS Messages Audio	<i>Partial</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>
MMS Messages Video	<i>Partial</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>
Stand-alone Files Graphic	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>
Stand-alone Files Audio	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>
Stand-alone Files Video	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>
Application Data Documents (txt, pdf files)	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>

Test Cases:	Galaxy S5	LG G4	Motorola Droid Turbo 2	HTC 10	Samsung GS7 Edge	Samsung J3	Motorola Z Force
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>	<i>NA</i>
Social Media Data Twitter	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data LinkedIn	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data Instagram	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
Social Media Data Pinterest	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data SnapChat	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data WhatsApp	<i>NA</i>	<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>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Internet Data 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>NA</i>
Internet Data 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>NA</i>
GPS Data Coordinates/Geo-tagged	<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>
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>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>
SQLite Data Report Active 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>	<i>As Expected</i>
SQLite Data Run SQLite Commands	<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>

Table 3b: Android Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49.

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

Document files are not reported for the iPhone 5S.

See Table 4 below for more details.

Test Cases:	Ios1	Ios2	Ios3	Ios4	Ios5	Ios6	Ios7
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>
Acquisition Disrupted	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>
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>
Reporting 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/ MEID/ESN	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 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	<i>Partial</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	<i>Partial</i>
PIM Data Calendar	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 Memos/ Notes	<i>Not As Expected</i>	As <i>Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	As <i>Expected</i>	As <i>Expected</i>	NA
Call Logs Incoming	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>
Call Logs Outgoing	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>
Call Logs Missed	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>
SMS Messages Incoming	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>
SMS Messages Outgoing	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>
MMS Messages Graphic	<i>Partial</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>
MMS Messages Audio	<i>Partial</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>
MMS Messages Video	<i>Partial</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>
Stand-alone Files Graphic	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>
Stand-alone Files Audio	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>
Stand-alone Files Video	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>
Application Data Documents (txt, pdf files)	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>

Test Cases:	Ios1	Ios2	Ios3	Ios4	Ios5	Ios6	Ios7
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>	<i>NA</i>
Social Media Data Twitter	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data LinkedIn	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Social Media Data Instagram	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
Social Media Data Pinterest	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data SnapChat	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data WhatsApp	<i>NA</i>	<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>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>
Internet Data 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>NA</i>
Internet Data 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>NA</i>
GPS Data Coordinates/Geo-tagged	<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>
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>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>
SQLite Data Report Active 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>	<i>As Expected</i>
SQLite Data Run SQLite Commands	<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>

Table 4: iOS Devices

4.3 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with UFED4PC v7.45.1.43, Physical Analyzer v7.47.0.49.

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

See Table 5 below for more details.

UFED4PC v7.45.1.43/PA v7.47.0.49		
Test Cases – UICC Acquisition		Universal Integrated Circuit Card
Connectivity	Non Disrupted	<i>As Expected</i>
	Disrupted	<i>As Expected</i>
Equipment/ User Data	Service Provider Name (SPN)	<i>As Expected</i>
	ICCID	<i>As Expected</i>
	IMSI	<i>As Expected</i>
	MSISDN	<i>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>As Expected</i>
	GPRSLOCI	<i>As Expected</i>
Acquisition	Acquire All	<i>As Expected</i>
	Selected All	<i>As Expected</i>
	Select Individual	<i>As Expected</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>As Expected</i>

Table 5: Universal Integrated Circuit Cards