



# UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4

Test Results for Mobile Device Acquisition Tool

*January 6, 2016*



**Homeland  
Security**

Science and Technology

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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 Cellebrite UFED 4PC v4.2.6.5 – UFED Physical Analyzer v4.2.6.4 across supported Android, iOS and feature phones.

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

## How to Read This Report

This report is divided into four sections. Section 1 identifies and provides a summary of any significant anomalies observed in the test runs. This section is sufficient for most readers to assess the suitability of the tool for the intended use. Section 2 identifies the mobile devices used for testing. Section 3 lists testing environment, the internal memory and Universal Integrated Circuit Cards (UICC) data objects used to populate the mobile devices and associated media. Section 4 provides an overview of the test case results reported by the tool. The full test data is available at [http://www.cftt.nist.gov/mobile\\_devices.htm](http://www.cftt.nist.gov/mobile_devices.htm).

# Test Results for Mobile Device Acquisition Tool

Tool Tested: Cellebrite Inc.  
Software Version: UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4

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## 1 Results Summary

Cellebrite’s UFED 4PC is a versatile mobile forensic solution that runs on existing hardware. It comes with a suite of applications, peripherals and accessories, invaluable for investigators to close cases. UFED 4PC provides users with:

- A comprehensive all-in-one software solution
- A Windows-compatible tool that easily adapts to a variety of user workflows and environments
- Closed and self-contained environment for forensically sound extractions
- Simultaneous operations carried out at the same time
- Supports all data types
- Easily integrates with the user’s customized work environment
- Unique evidence verification engine enables validation of recovered artifacts
- Frequent updates to ensure compatibility with new phones as they enter the market

UFED 4PC is available with either an Ultimate or Logical solution offering, and as standard, comes with a range of supporting applications for in-depth decoding, analysis and reporting.

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

### ***Equipment / Subscriber related data:***

- Subscriber related data (i.e., MSISDN) was not reported. (Devices: *Android, BlackBerry Z10, BlackBerry Q10, HTC Win 8, Nokia Lumia*)
- Subscriber related data (i.e., IMEI) was not reported. (Devices: *Nexus 4, HTC Win 8, Nokia Lumia*)

### ***Personal Information Management (PIM) data:***

- Data associated with Address Book “Contacts” (i.e. graphic files) are not reported. (Devices: *Samsung Rugby 3, LG Extravert, Samsung Convoy 3*)

- Memos are not reported. (Devices: *Galaxy Note 3*, *HTC One GSM*, *HTC One CDMA*, *Nexus 4*)
- Incoming MMS attachments (i.e., graphic, audio, video) were not viewable. (Device: *Galaxy S3*)
- The status flags for deleted memos are incorrectly reported as “active”. (Devices: *iPad Air CDMA*, *iPad Mini CDMA*)

***Application Data:***

- Application related data was not acquired. (Devices: *iOS*, *HTC One GSM*)

***Stand-alone Files:***

- Stand-alone files (e.g., graphic, audio, video) present within the internal memory were not completely reported. (Devices: *BlackBerry Z10*, *BlackBerry Q10*, *Samsung Convoy 3*, *LG Extravert*)

***Internet Related Data:***

- Bookmarks are not reported. (Device: *Galaxy S4*)

***GPS Data:***

- GPS related data was not acquired. (Devices: *Galaxy S4*, *Nexus 4*)

**NOTES:**

- Non-Latin characters (i.e., Chinese) are not displayed (they are blank) in the generated pdf report. They are displayed correctly in the generated html report.
- All data extracted from mobile devices via logical, file-system or physical acquisitions should be exportable to the generated report or provide the user with a supported exportable data elements.
- Hash values for acquired data are not reported within the preview-pane. They are present within the generated report.

For more test result details see section 4.

## 2 Mobile Devices

The following table lists the mobile devices used for testing Cellebrite UFED 4PC – Physical Analyzer.

Make	Model	OS	Firmware	Network
Apple iPhone	5	iOS 6.1.4 (10B350)	3.04.25	GSM
Apple iPhone	5s	iOS 7.1 (11D167)	2.18.02	CDMA
Apple iPad	iPad 2 - MD065LL/A	iOS 6.1.3 (10B329)	04.12.05	GSM
Apple iPad	iPad Air - ME999LL/A	iOS 7.1 (11D167)	2.18.02	CDMA
Apple iPad Mini	iPad Mini - ME030LL/A	iOS 6.1.3 (10B329)	3.04.25	GSM
Apple iPad Mini	iPad Mini - MF075LL/A	iOS 7.0.4 (11B554a)	1.03.01	CDMA
Samsung Galaxy S3	SGH-1747	Android 4.1.2	1747UCDMG2	GSM
Samsung Galaxy S4	SGH-M919	Android 4.2.2	M919UVUAMD	GSM
Samsung Galaxy S5	SM-G900V	Android 4.2.2	G900V.05	CDMA
HTC One	HTCC6525LV W	Android 4.2.2	0.89.20.0222	GSM
HTC One	HTC One	Android 4.1.2	4A.17.3250.20_10.40.1150.0 4L	CDMA
Samsung Galaxy Note 3	SM-N900V	Android 4.3	N900V.07	CDMA
Nexus 4	Nexus 4	Android 4.3	JWR66Y	GSM
Blackberry	Z10 – STL100-4	BB 10.2.1.2174	672849	GSM
Blackberry	Q10	BB 10.2.1.2122	672849	GSM
HTC Win 8x	HTC PM23300	Windows Phone 8.0	3030.0.34101.502	GSM
Nokia Lumia	920	Windows Phone 8.0	1232.5962.1314.0001	GSM
Samsung Rugby 3	SGH-A997	A997UCM G1	REV0.2	GSM
LG Extravert	LG-VN280	Brew MP v1.0.3	VN28010A	CDMA
Samsung Convoy 3	SCH-U680	Brew MP 1.0.4	V.U680.MJ2	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 and UICCs.

#### 3.1 Execution Environment

Cellebrite UFED 4PC version 4.2.6.5 – Physical Analyzer v4.2.6.4 was installed on Windows 7 v6.1.7601.

#### 3.2 Internal Memory Data Objects

Cellebrite UFED 4PC – Physical Analyzer was measured by analyzing acquired data from the internal memory of pre-populated mobile devices. Table 2 defines the data objects and elements used for populating mobile devices provided the mobile device supports the data element.

Data Objects	Data Elements
Address Book Entries	
	<i>Regular Length</i>
	<i>Maximum Length</i>
	<i>Special Character</i>
	<i>Blank Name</i>
	<i>Regular Length, email</i>
	<i>Regular Length, graphic</i>
	<i>Regular Length, Address</i>
	<i>Deleted Entry</i>
	<i>Non-ASCII Entry</i>
PIM Data	
Datebook/Calendar	<i>Regular Length</i>
Memos	<i>Maximum Length</i>
	<i>Deleted Entry</i>
	<i>Special Character</i>
	<i>Blank Entry</i>
Call Logs	
	<i>Incoming</i>
	<i>Outgoing</i>
	<i>Missed</i>
	<i>Incoming - Deleted</i>
	<i>Outgoing - Deleted</i>
	<i>Missed - Deleted</i>
Text Messages	
	<i>Incoming SMS - Read</i>
	<i>Incoming SMS - Unread</i>
	<i>Outgoing SMS</i>
	<i>Incoming EMS - Read</i>

<b>Data Objects</b>	<b>Data Elements</b>
	<i>Incoming EMS - Unread</i>
	<i>Outgoing EMS</i>
	<i>Incoming SMS - Deleted</i>
	<i>Outgoing SMS - Deleted</i>
	<i>Incoming EMS - Deleted</i>
	<i>Outgoing EMS - Deleted</i>
	<i>Non-ASCII SMS/EMS</i>
<b>MMS Messages</b>	
	<i>Incoming Audio</i>
	<i>Incoming Graphic</i>
	<i>Incoming Video</i>
	<i>Outgoing Audio</i>
	<i>Outgoing Graphic</i>
	<i>Outgoing Video</i>
<b>Application Data</b>	
	<i>Device Specific App Data</i>
<b>Stand-alone data files</b>	
	<i>Audio</i>
	<i>Graphic</i>
	<i>Video</i>
	<i>Audio - Deleted</i>
	<i>Graphic - Deleted</i>
	<i>Video - Deleted</i>
<b>Internet Data</b>	
	<i>Visited Sites</i>
	<i>Bookmarks</i>
<b>Location Data</b>	
	<i>GPS Coordinates</i>
<b>Social Media Data</b>	
	<i>Facebook</i>
	<i>Twitter</i>
	<i>LinkedIn</i>

**Table 2: Internal Memory Data Objects**

### 3.3 UICC Data Objects

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

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

**Table 3: UICC Data Objects**

## 4 Test Results

This section provides the test cases results reported by the tool. Sections 4.1 – 4.3 identify the mobile device operating system type (e.g., Android, iOS, feature phones) and the make and model of mobile devices used for testing Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4. Section 4.4 covers Universal Integrated Circuit Cards (UICCs).

The *Test Cases* column (internal memory acquisition/UICC) in sections 4.1 - 4.4 are comprised of two sub-columns that define a particular test category and individual sub-categories that are verified when acquiring the internal memory for supported mobile devices and UICCs within each test case. Each individual sub-category row results for each mobile device/UICC tested. The results are as follows:

*As Expected:* the mobile forensic application returned expected test results – the tool acquired and reported data from the mobile device/UICC successfully.

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

*Not As Expected:* the mobile forensic application failed to return expected test results – the tool did not acquire or report supported data from the mobile device/UICC successfully.

NA: Not Applicable – the mobile forensic application is unable to perform the test or the tool does not provide support for the acquisition for a particular data element.

## 4.1 Android Mobile Devices

The internal memory contents for Android devices were acquired and analyzed with Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4.

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

- Subscriber related data (i.e., MSISDN) were not reported for all Android devices.
- Subscriber related data (i.e., IMEI) was not reported for the Nexus 4.
- Memos are not reported for the Galaxy Note 3, HTC One GSM, HTC One CDMA or the Nexus 4.
- Incoming MMS attachments (i.e., graphic, audio, video) were not viewable – unable to be opened for the Galaxy S3.
- Documents (i.e., pdf, txt) are not reported for the HTC One GSM.
- Bookmarks are not reported for the Galaxy S4.
- GPS related data was not acquired for the Galaxy S4 or the Nexus 4.

### NOTES:

- Connectivity instructions for the Galaxy S5 and Note 3 are incorrect – Tip T-100 is incorrect for the devices interface.

See Table 4 below for more details.

Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4								
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android						
		Galaxy S3 GSM	Galaxy S4 GSM	Galaxy S5 CDMA	Galaxy Note 3 CDMA	HTC One GSM	HTC One CDMA	Nexus 4
Connectivity	Non Disrupted	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Disrupted	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Reporting	Preview-Pane	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
Equipment/ User Data	IMEI	As Expected	As Expected	NA	NA	As Expected	NA	Not As Expected

**Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4**

Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android						
		Galaxy S3 GSM	Galaxy S4 GSM	Galaxy S5 CDMA	Galaxy Note 3 CDMA	HTC One GSM	HTC One CDMA	Nexus 4
	MEID/ESN	NA	NA	As Expected	As Expected	NA	As Expected	NA
	MSISDN	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected
PIM Data	Contacts	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Calendar	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	To-Do List/ Tasks	NA	NA	NA	NA	NA	NA	NA
	Memos	As Expected	As Expected	As Expected	Not As Expected	Not 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
	Outgoing	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
SMS Messages	Incoming	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
MMS Messages	Graphic	Partial	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
	Video	Partial	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
	Audio	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
Application Data	Documents	As Expected	As Expected	As Expected	As Expected	Not As Expected	As Expected	As Expected
	Spreadsheets	NA	NA	NA	NA	NA	NA	NA
	Presentations	NA	NA	NA	NA	NA	NA	NA
Internet Data	Bookmarks	As Expected	Not As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	History	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Social Media Data	Facebook	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected

Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4								
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android						
		Galaxy S3 GSM	Galaxy S4 GSM	Galaxy S5 CDMA	Galaxy Note 3 CDMA	HTC One GSM	HTC One CDMA	Nexus 4
	Twitter	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>
	LinkedIn	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	Acquire All	As <i>Expected</i>	NA	NA	NA	As <i>Expected</i>	NA	NA
	Selected All	NA	As <i>Expected</i>	NA	As <i>Expected</i>	NA	As <i>Expected</i>	NA
	Select Individual	NA	NA	As <i>Expected</i>	NA	NA	NA	As <i>Expected</i>
Case File Data Protection	Modify Case Data	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>
Physical Acquisition	Readability	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>
	Deleted File Recovery	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>
Non-ASCII Character	Reported in native format	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>
Hashing	Hashes reported for acquired data objects	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>
GPS Data	Coordinates (Long/Lat)	As <i>Expected</i>	Not As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	As <i>Expected</i>	Not As <i>Expected</i>

**Table 4: Android Mobile Devices**

## 4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4.

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

- The status flags for deleted memos are incorrectly reported as “active” for the iPad Air CDMA and the iPad Mini CDMA.
- Documents (i.e., pdf, txt) are not reported for all iOS devices.

See Table 5 below for more details.

**Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4**

<b>Test Cases – Internal Memory Acquisition</b>		<i>Mobile Device Platform: iOS</i>					
		<i>iPhone 5 GSM</i>	<i>iPhone 5s CDMA</i>	<i>iPad GSM</i>	<i>iPad Air CDMA</i>	<i>iPad Mini GSM</i>	<i>iPad Mini CDMA</i>
<b>Connectivity</b>	Non Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Reporting</b>	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>
	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>
<b>Equipment/ User Data</b>	IMEI	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>
	MEID/ESN	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>
	MSISDN	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>
<b>PIM Data</b>	Contacts	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Calendar	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	To-Do List/ Tasks	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Memos	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Partial</i>	<i>As Expected</i>	<i>Partial</i>
<b>Call Logs</b>	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Missed	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<b>SMS Messages</b>	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>MMS Messages</b>	Graphic	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Stand-alone Files</b>	Graphic	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>

**Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4**

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

**Table 5: iOS Mobile Devices**

### **4.3 BlackBerry, Windows Mobile, Feature Phones**

The internal memory contents for BlackBerry, Windows Mobile and feature phones were acquired and analyzed with Cellebrite UFED 4PC v4.2.6.5 - Physical Analyzer v4.2.6.4.



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

- Subscriber related data (i.e. IMEI) was not reported for the HTC Win 8 or the Nokia Lumia.
- Subscriber related data (i.e. MSISDN) was not reported for BlackBerry Z10, BlackBerry Q10, HTC Win 8 or the Nokia Lumia.
- Graphic files associated with Address Book Contacts were not reported for the Samsung Rugby 3, LG Extravert or the Samsung Convoy 3.
- Stand-alone files (i.e., graphic, audio, video) were partially reported (e.g., native audio, graphic and video files were not acquired) for the BlackBerry Z10, BlackBerry Q10 or the Samsung Convoy 3.
- Stand-alone files (i.e., graphic, audio) were partially reported (e.g., native audio, graphic and video files were not acquired) for the LG Extravert.

See Table 6 below for more details.

<b>Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4</b>								
<b>Test Cases – Internal Memory Acquisition</b>		<i>Mobile Device Platforms: Blackberry, Windows, Feature Devices</i>						
		<b>BBerry Z10 GSM</b>	<b>BBerry Q10 GSM</b>	<b>HTC Win 8 GSM</b>	<b>Nokia Lumia</b>	<b>Samsung Rugby 3</b>	<b>LG Extravert</b>	<b>Samsung Convoy 3</b>
<b>Connectivity</b>	Non Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Reporting</b>	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>
	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>
<b>Equipment/ User Data</b>	IMEI	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>
	MSISDN	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>PIM Data</b>	Contacts	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Calendar	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	To-Do List/ Tasks	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Memos	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<b>Call Logs</b>	Incoming	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>

**Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4**

<b>Test Cases – Internal Memory Acquisition</b>		<i>Mobile Device Platforms: Blackberry, Windows, Feature Devices</i>						
		<b>BBerry Z10 GSM</b>	<b>BBerry Q10 GSM</b>	<b>HTC Win 8 GSM</b>	<b>Nokia Lumia</b>	<b>Samsung Ruyg 3</b>	<b>LG Extravert</b>	<b>Samsung Convoy 3</b>
	Outgoing	NA	NA	NA	NA	NA	NA	As Expected
	Missed	NA	NA	NA	NA	NA	NA	As Expected
<b>SMS Messages</b>	Incoming	As Expected	As Expected	NA	NA	As Expected	As Expected	As Expected
	Outgoing	As Expected	As Expected	NA	NA	As Expected	As Expected	As Expected
<b>MMS Messages</b>	Graphic	As Expected	As Expected	NA	NA	NA	NA	NA
	Audio	As Expected	As Expected	NA	NA	NA	NA	NA
	Video	As Expected	As Expected	NA	NA	NA	NA	NA
<b>Stand-alone Files</b>	Graphic	Partial	Partial	As Expected	As Expected	As Expected	Partial	Partial
	Audio	Partial	Partial	As Expected	As Expected	As Expected	Partial	Partial
	Video	Partial	Partial	As Expected	As Expected	As Expected	As Expected	Partial
<b>Application Data</b>	Documents	NA	NA	NA	NA	NA	NA	NA
	Spreadsheets	NA	NA	NA	NA	NA	NA	NA
	Presentations	NA	NA	NA	NA	NA	NA	NA
<b>Internet Data</b>	Bookmarks	NA	NA	NA	NA	NA	NA	NA
	History	NA	NA	NA	NA	NA	NA	NA
<b>Social Media Data</b>	Facebook	NA	NA	NA	NA	NA	NA	NA
	Twitter	NA	NA	NA	NA	NA	NA	NA
	LinkedIn	NA	NA	NA	NA	NA	NA	NA
<b>Acquisition</b>	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Selected All	NA	NA	NA	NA	NA	NA	NA
	Select Individual	NA	NA	NA	NA	NA	NA	NA
<b>Case File Data Protection</b>	Modify Case Data	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
<b>Physical Acquisition</b>	Readability	NA	NA	NA	NA	NA	NA	NA
	Deleted File Recovery	NA	NA	NA	NA	NA	NA	NA
<b>Non-ASCII Character</b>	Reported in native format	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected

Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4								
Test Cases – Internal Memory Acquisition		Mobile Device Platforms: Blackberry, Windows, Feature Devices						
		BBerry Z10 GSM	BBerry Q10 GSM	HTC Win 8 GSM	Nokia Lumia	Samsung Rugsy 3	LG Extravert	Samsung Convoy 3
Hashing	Hashes reported for acquired data objects	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
GPS Data	Coordinates (Long/Lat)	NA	NA	NA	NA	NA	NA	NA

Table 6: BlackBerry, Windows Mobile, and Feature Phones

#### 4.4 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4.

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

See Table 7 below for more details.

Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4		
Test Cases – UICC Acquisition		Universal Integrated Circuit Card
Connectivity	Non Disrupted	As Expected
	Disrupted	As Expected
Equipment/ User Data	Service Provider Name (SPN)	As Expected
	ICCID	As Expected
	IMSI	As Expected
	MSISDN	As Expected
PIM Data	Abbreviated Dialing Numbers (ADNs)	As Expected
	Last Numbers Dialed (LNDs)	As Expected
	SMS Messages	As Expected
	EMS Messages	As Expected
Location Related Data	LOCI	As Expected
	GPRSLOCI	As Expected

<b>Cellebrite UFED 4PC v4.2.6.5 – Physical Analyzer v4.2.6.4</b>		
<b>Test Cases – UICC Acquisition</b>		<i>Universal Integrated Circuit Card</i>
<b>Acquisition</b>	Acquire All	<i>As Expected</i>
	Selected All	<i>NA</i>
	Select Individual	<i>NA</i>
<b>Case File Data Protection</b>	Modify Case Data	<i>As Expected</i>
<b>Password Protected SIM Acquire</b>	Acquisition of Protected SIM	<i>As Expected</i>
<b>PIN/PUK Attempts</b>	PIN attempts reported	<i>As Expected</i>
	PUK attempts reported	<i>As Expected</i>
<b>Non-ASCII Character</b>	Non-ASCII characters	<i>As Expected</i>
<b>Hashing</b>	Hashes reported for acquired data objects	<i>As Expected</i>

**Table 7: Universal Integrated Circuit Cards**