



Mobile Phone Examiner Plus v5.5.3.73

Test Results for Mobile Device Acquisition Tool

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**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 Law Enforcement Standards Office (OLES) 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 MPE+ v5.5.3.73 across supported Android and iOS devices. The images captured from the test runs are available at the CFREDS Web site (<http://www.cfreds.nist.gov/>).

Test results from other tools can be found on the DHS S&T-sponsored digital forensics web page, <http://www.cyberfetch.org/>.

How to Read This Report

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

Test Results for Mobile Device Acquisition Tool

Tool Tested: Mobile Phone Examiner Plus
Software Version: v5.5.3.73

Supplier: Access Data

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Menlo Park, California 94025

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1 Results Summary

MPE+ is designed for perform a secure forensic extraction of data from a variety of mobile devices, such as smartphones and tablets.

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.

Acquisition Disruption:

- There was no error message when disrupting UICC connection.

Equipment / Subscriber related data:

- Subscriber related data (i.e., MSISDN) was not reported. (Devices: *HTC One CDMA, HTC One GSM, Nexus 4, Galaxy S3, Galaxy S4, Galaxy S5*)

Personal Information Management (PIM) data:

- Stand-alone files (i.e., graphic, audio, video) were not reported. (Device: *Nexus4*)
- Stand-alone audio files were not reported. (Device: *HTC One CDMA, HTC One GSM*)
- Contact entries with maximum length and regular length with middle name were partially recovered (i.e., middle name was not recovered). (Devices: *iOS devices*)
- Calendar entries are not present when a case is saved and the data file is re-opened. (Devices: *iOS devices*)
- Personal Information Management (PIM) data (i.e., graphic files associated with address book entries) were not reported. (Devices: *Android devices*)
- Social media related data was partially acquired. (Devices: *HTC One GSM, Galaxy S3*)

Call Logs:

- Active incoming calls status flags were incorrectly reported as missed. (Devices: *iPhone 5S*)

Application Related Data:

- Application related (i.e., .txt and .pdf documents) data were not reported. (Devices: *Android devices, iOS devices*)

Internet Related Data:

- Browser History was not acquired. (Device: *Galaxy Note3*)
- Bookmarks were partially acquired. (Device: *Nexus 4*)
- Bookmarks were not acquired. (Device: *Galaxy Note3*)

MMS messages:

- Incoming and outgoing audio, video and picture messages were not reported. (Device: *HTC One CDMA*)

Non-Latin Character Presentation:

- Address book entries containing non-Latin characters were incorrectly reported. Characters reported in different order. (Devices: *iPhone 5S CDMA, iPad Air CDMA, iPad Mini CDMA*)

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing MPE+.

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

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

Mobile Phone Examiner Plus version 5.5.3.73 was installed on Windows 7 v6.1.7601.

3.2 Internal Memory Data Objects

Mobile Phone Examiner was measured by analyzing acquired data from the internal memory of pre-populated mobile devices. Table 2 defines the data objects and elements used for populating mobile devices provided the mobile device supports the data element.

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

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

Table 2: Internal Memory Data Objects

3.3 UICC Data Objects

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

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

Table 3: UICC Data Objects

4 Test Results

This section provides the test cases results reported by the tool. Sections 4.1 – 4.3 identify the mobile device operating system type (i.e., Android, iOS) and the make and model of mobile devices used for testing Mobile Phone Examiner Plus v5.5.3.73. Section 4.3 covers Universal Integrated Circuit Cards (UICCs).

The *Test Cases* column (internal memory acquisition/UICC) 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 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 Mobile Phone Examiner Plus v5.5.3.73.

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 acquired for the HTC One CDMA, HTC One GSM, Nexus 4, Galaxy S3, Galaxy S4, Galaxy S5.
- Stand-alone files (i.e., graphic, audio, video) were not acquired for the Nexus 4.
- Stand-alone files (i.e., audio) were not acquired for the HTC One GSM and HTC One CDMA.
- Acquisition of PIM Data i.e. *graphic files associated with contact entries* were not acquired for all Android devices.
- Social media related data was partially acquired for the HTC One GSM and Galaxy S3.
- Application related data (i.e., txt, pdf documents) was not acquired for all Android devices.
- Visited Internet URLs history was not acquired for the Galaxy Note3.
- Bookmarks for visited Internet URLs were partially acquired for the Nexus 4.
- Bookmarks for visited Internet URLs were not acquired for the Samsung Galaxy Note 3.
- Incoming and outgoing audio, video and picture (MMS) messages were not acquired for the HTC One CDMA.

See Table 4 below for more details.

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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 GSM
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

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Android</i>						
		<i>Galaxy S3 GSM</i>	<i>Galaxy S4 GSM</i>	<i>Galaxy S5 CDMA</i>	<i>Galaxy Note 3 CDMA</i>	<i>HTC One GSM</i>	<i>HTC One CDMA</i>	<i>Nexus 4 GSM</i>
Equipment/ User Data	IMEI	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>As Expected</i>	<i>NA</i>
	MSISDN	<i>Not As Expected</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>	<i>Not As Expected</i>
PIM Data	Contacts	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</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>
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>
	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>
	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>
	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>Not 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>Not 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>Not 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>Not As Expected</i>
	Audio	<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>
	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>Not As Expected</i>
Application Data	Documents	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	Spreadsheets	<i>NA</i>	<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>	<i>NA</i>
Internet Data	Bookmarks	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Partial</i>
	History	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Social Media	Facebook	<i>Not As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>NA</i>	<i>Partial</i>	<i>NA</i>

MPE+ v5.5.3.73								
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 GSM
Data	Twitter	As Expected	As Expected	As Expected	As Expected	NA	Partial	NA
	LinkedIn	Not As Expected	As Expected	As Expected	As Expected	NA	Partial	NA
Acquisition	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Selected All	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Select Individual	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Case File Data Protection	Modify Case Data	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
Physical Acquisition	Readability	NA	NA	NA	NA	NA	NA	NA
	Deleted File Recovery	NA	NA	NA	NA	NA	NA	NA
Non-ASCII Character	Reported in native format	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
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 4: Android Mobile Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with Mobile Phone Examiner Plus v5.5.3.73.

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

- Stand-alone files (i.e., graphic, audio, video) were not present in generated pdf report for all iOS devices.
- Contact entries with *Maximum Length* and *Regular Length with Middle Name* were partially acquired for all iOS devices.
- Calendar entries are not present when a case is saved and the data file is re-opened for all iOS devices.

- Active incoming, outgoing and missed calls status flags were incorrectly reported as missed.
- Application Data (i.e, txt, pdf documents) was not acquired for all iOS devices.
- Address book containing *non-Latin contact entries* (i.e., Chinese) were incorrectly reported for CDMA devices.

NOTES:

- For CDMA devices (*iPhone 5S, iPad Air and the iPadMini*) the MEID was not reported. The IMEI was reported instead but the value was consistent with the MEID.
- Hash values were only present in generated pdf for all iOS devices.

See Table 5 below for more details.

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>					
		<i>iPhone5 GSM</i>	<i>iPhone5S CDMA</i>	<i>iPad GSM</i>	<i>iPad Air CDMA</i>	<i>iPad Mini GSM</i>	<i>iPad Mini CDMA</i>
Connectivity	Non Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Disrupted	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Reporting	Preview-Pane	<i>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>
Equipment/ User Data	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>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
PIM Data	Contacts	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Calendar	<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>
	To-Do List/ Tasks	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Memos	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Call Logs	Incoming	<i>As Expected</i>	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Outgoing	<i>As</i>	<i>Not As</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>					
		<i>iPhone5 GSM</i>	<i>iPhone5S CDMA</i>	<i>iPad GSM</i>	<i>iPad Air CDMA</i>	<i>iPad Mini GSM</i>	<i>iPad Mini CDMA</i>
		<i>Expected</i>	<i>Expected</i>				
	Missed	<i>As Expected</i>	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
SMS Messages	Incoming	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
MMS Messages	Graphic	<i>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>
Stand-alone Files	Graphic	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Application Data	Documents	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
	Spreadsheets	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Presentations	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Internet Data	Bookmarks	<i>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>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Selected 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>
	Select Individual	<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>
Physical Acquisition	Readability	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	Deleted File	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

MPE+ v5.5.3.73							
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS					
		iPhone5 GSM	iPhone5S CDMA	iPad GSM	iPad Air CDMA	iPad Mini GSM	iPad Mini CDMA
	Recovery						
Non-ASCII Character	Reported in native format	<i>As Expected</i>	<i>Partial</i>	<i>As Expected</i>	<i>Partial</i>	<i>As Expected</i>	<i>Partial</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 Universal Integrated Circuit Cards (UICCs)

The internal memory contents for Universal Integrated Circuit Cards (UICCs) were acquired and analyzed with Mobile Phone Examiner Plus v5.5.3.73.

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

- No error message was present when connectivity was disrupted.

See Table 7 below for more details.

MPE+ v5.5.3.73		
Test Cases – UICC Acquisition		Universal Integrated Circuit Card
Connectivity	Non Disrupted	<i>As Expected</i>
	Disrupted	<i>Not 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>

MPE+ v5.5.3.73		
Test Cases – UICC Acquisition		<i>Universal Integrated Circuit Card</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>NA</i>

Table 6: Universal Integrated Circuit Cards