

July 2020

**Test Results for Mobile Device Acquisition Tool:**  
MPE+ v5.8.0.153

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## Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the Department of Homeland Security, Science and Technology Directorate (DHS S&T), 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 MPE+ v5.8.0.153 across supported mobile devices and associated media e.g., smart phones, tablets, feature phones 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: MPE+

Software Version: V5.8.0.153

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## 1 Results Summary

Mobile Phone Examiner Plus (MPE+) v5.8.0.153 is a mobile device data review tool that can be used in the field as part of a mobile field unit or in the lab. The data extracted from mobile devices, using MPE+, can be imported into an FTK case. This allows more in-depth drill-down, categorization, full-text index searching, and all of this is right along side other digital evidence collected for a case. MPE+ can extract information such as phone and address book data, media files, call logs, SMS and MMS messages, calendar, and file system data stored in the memory of a mobile device.

Except for the following anomalies, the tool acquired all supported data objects completely and accurately for all mobile devices tested.

### ***Acquisition:***

- Disruption of acquisition does not provide an error message to the user. (Devices: *Motorola Turbo 2, Samsung J3, Google Pixel XL, Motorola Z Force, HTC 10, Galaxy Tab S2, iPhone 5S*)

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

- Contact/Address Book entries are partially reported. (Devices: *Android devices*)
- Contact entries with long names are truncated. (Device: *iPhone 6S Plus*)
- Calendar entries are not reported. (Devices: *Samsung J3, Google Pixel XL, HTC 10, Galaxy Note 3*)
- Notes/memos are not reported. (Devices: *Droid Turbo 2, Google Pixel XL, HTC 10, Galaxy Note 3*)

### ***SMS messages:***

- SMS messages are not reported. (Devices: *Ellipsis 8, Galaxy Tab S2*)

**MMS messages:**

- MMS messages are partially acquired. (Devices: *Droid Turbo 2, Samsung J3, Google Pixel XL, Motorola Z Force, Note 3*)
- MMS messages are not reported. (Devices: *Ellipsis 8, Galaxy Tab S2*)

**Stand-alone Files:**

- Graphic, audio and video files are not reported. (Device: *Ellipsis 8*)
- Audio files are partially reported. (Device: *Galaxy Tab S2*)
- Graphic and video files are not reported. (Device: *Galaxy Tab S2*)

**Application Data:**

- Application data (i.e., .txt and .pdf files) is not reported. (Devices: *Droid Turbo 2, Galaxy Note 3, iPhone 5S, iPhone 6S Plus*)
- Application data (i.e., .pdf file) is partially reported. (Devices: *Samsung J3, Google Pixel XL, Motorola Z Force, HTC 10*)

**Social Media Related Data:**

- Social media related data (i.e., Facebook, Twitter and LinkedIn) is not reported. (Devices: *Droid Turbo 2, Galaxy Note 3*)
- Social media related data (i.e., Facebook, Twitter, LinkedIn and Instagram) is not reported. (Devices: *Samsung J3, Google Pixel XL*)
- Social media related data (i.e., Facebook, LinkedIn and Instagram) is not reported. (Device: *HTC 10*)
- Social media related data (i.e., Twitter) was partially reported. (Device: *HTC 10*)
- Social media related data (i.e., Facebook) was not reported. (Device: *iPhone 5S*)
- Social media related data (i.e., Twitter, LinkedIn) was partially reported. (Device: *iPhone 5S*)
- Social media related data (i.e., Facebook, Twitter and LinkedIn) is partially reported. (Device: *iPhone 6S Plus*)
- Social media related data (i.e., Instagram) is not reported. (Device: *iPhone 6S Plus*)

**Internet Related Data:**

- Internet related data (i.e., Emails) is not reported. (Device: *Droid Turbo 2*)
- Internet related data (i.e., Bookmarks, Browser History and Emails) is not reported. (Devices: *Samsung J3, Google Pixel XL, Motorola Z Force, HTC 10, Galaxy Note 3*)

**Location Related Data:**

- GPS related data (i.e., longitude, latitude coordinates, address) are not reported. (Devices: *Droid Turbo 2, Samsung 3, Google Pixel XL, HTC 10, Galaxy Note 3*)

**Case File Data Protection:**

- Case file is re-opened after being modified. (Devices: *Droid Turbo 2, Google Pixel XL, iPhone 4, iPhone 6S Plus*)

**Notes:**

- ❖ *The recorded results are based upon the outcome of performing all supported data extraction techniques i.e., logical, filesystem, physical for each device.*

- ❖ Using the manufacturer and model options “Android and dLogical” could not establish connectivity with the LG G5 and Huawei devices.
- ❖ Using the manufacturer and model options “Apple and dLogical” could not establish connectivity with the iPhone X, iPad Air v11.2.1 and iPad Mini v11.3.1.

For more test result details see section 4.

## 2 Mobile Devices

The following table lists the mobile devices used for testing MPE+ v5.8.0.153.

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	X	iOS 11.3.1 (15E302)	1.89.00	CDMA
Apple iPhone	Air	iOS 11.2.1 (11D167)	2.18.02	CDMA
Apple iPhone	Mini	iOS 11.3.1 (15E302)	4.52.00	CDMA
Hauwei P20 Pro	CLT-L29	Android 8.1.0	CLTL29810106(C636)	CDMA
LG	G5	Android 6.0.1	MMB29M	CDMA
Motorola Droid	Turbo2	Android 5.1.1	LCK23.130-23	CDMA
Samsung J3	J3 – SM-J320V	Android 6.0.1	MMB29M.J320VVRU2AP12	CDMA
Google Pixel XL	XL	Android 7.1.1	NMF26U	CDMA
Motorola	Z Force XT1650	Android 7.0	NCLS25.86-11-4	CDMA
HTC 10	HTC6545LVW	Android 6.0.1	1.85.605.8.8.0_g CL774095	CDMA
Samsung	Galaxy Note3 SMN900V	Android 4.4.2	KOT49H.N900VVRUCNC4	CDMA
Ellipsis 8	QTAQZ3	Android 4.4.2	KOT49H	CDMA
Samsung Galaxy	Tab S2	Android 5.1.1	LMY47X.T817BVRU2AOJ2	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

MPE+ v5.8.0.153 was installed on a machine running Windows 10 Pro for Workstations. Windows 10 version 10.0.17134 Build 17134.

#### 3.2 Internal Memory Data Objects

MPE+ v5.8.0.153 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>
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>

<b>Data Objects</b>	<b>Data Elements</b>
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-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>
	<i>Pinterest</i>
	<i>SnapChat</i>
	<i>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 and 4.2 identify the mobile device operating system type, media (e.g., Android, iOS) and the make and model of mobile devices used for testing MPE+ v5.8.0.153.

The *Test Cases* column (internal memory acquisition) in sections 4.1 and 4.2 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 MPE+ v5.8.0.153.

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

- Disruption of acquisition does not provide an error message, tool freezes or gets in a loop trying to acquire the device for the Motorola Turbo 2, Google Pixel XL, Motorola Z Force, HTC 10 and Galaxy Tab S2.
- Disruption of acquisition does not provide an error message, tool presents data up to the point when the connection was disrupted for the Samsung J3.
- Graphic files associated with contacts are not reported for the Droid Turbo 2, Google Pixel XL, Motorola Z Force, HTC 10, Galaxy Note 3, Ellipsis 8 and Galaxy Tab S2.
- Graphic files associated with contacts are reported within a temp folder but not associated with the contact for the Samsung J3.
- Calendar entries are not reported for the Droid Turbo 2, Samsung J3, Google Pixel XL, HTC 10 and Galaxy Note 3.
- Memos are not reported for the Droid Turbo 2, Samsung J3, Google Pixel XL, HTC 10 and Galaxy Note 3.
- Incoming MMS image and video file attachments are not reported. The path to the reference is provided but files can't be found for the Droid Turbo 2.
- MMS Audio and video attachments were reported but not associated with the text portion of the message for the Samsung J3 and Note 3.
- Incoming MMS message attachments were not viewable within the tool's preview pane; files had to be exported to be able to be seen or played for the Google Pixel XL.
- MMS audio and video attachments had to be exported to be able to play them for the Motorola Z Force.
- SMS and MMS are not reported for the Ellipsis 8 and Galaxy Tab S2.
- Stand-alone files (graphic, audio, video) are not reported for the Ellipsis 8.
- Stand-alone files (audio) have to be exported to be able to play it and hear it for the Galaxy Tab S2.
- Stand-alone files (graphic, video) are not reported for the Galaxy Tab S2.
- Documents (txt, pdf) are not reported for the Droid Turbo 2 and Galaxy Note 3.
- Documents (txt, pdf) are partially reported, pdf file has to be exported to be viewable/readable for the Samsung J3, Google Pixel XL, Motorola Z Force and HTC 10.
- Facebook, Twitter and LinkedIn social media data is not reported for the Droid Turbo 2.
- Instagram social media was partially reported for the Droid Turbo 2. Only one graphic file was reported.
- Facebook, Twitter, LinkedIn and Instagram social media data is not reported for the Samsung J3 and Google Pixel XL.
- Facebook, LinkedIn and Instagram social media data is not reported for the HTC 10.

- Twitter social media data is partially reported, graphic files had to be exported and its extension had to be changed to .jpeg to make them viewable for the HTC 10.
- Facebook, Twitter and LinkedIn social media data is not reported for the Galaxy Note 3.
- Emails are not reported for the Droid Turbo 2.
- Bookmarks, Browser History and Emails are not reported for the Samsung J3, Google Pixel XL, Motorola Z Force, HTC 10 and Galaxy Note 3.
- GPS related data (i.e., longitude, latitude coordinates) from associated Maps navigational apps are not reported for the Droid Turbo 2, Samsung J3, Google Pixel XL and Galaxy Note 3.
- Case file was modified and re-opened. The tool was able to present some of the data previously acquired. Some data was missing for the Droid Turbo 2 and Google Pixel XL.

**Notes:**

- The profile for the Motorola DROID 2 was used to acquire the *Motorola Droid Turbo 2*.
- The manufacturer and model option used to acquire data from all Android devices was the general “Android and dLogical” option as there was not a specific model offered for any of them.
- Tool re-opened a modified case showing no information to the user without any error message.
- Using the manufacturer and model options “Android and dLogical” for the *Ellipsis 8* and *Galaxy Tab S2* did not support the acquisition of Internet Related data and Social Media data.
- Internal tool viewer could not open the PDF file, it had to be exported and use a PDF reader to be able to open it for the HTC 10.

See Table 3 below for more details.

MPE+ v5.8.0.153									
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android							
		Motorola Droid Turbo 2	Samsung J3	Google Pixel XL	Moto Z Force	HTC 10	Galaxy Note 3	Ellipsis 8	Galaxy Tab S2
Acquisition	Acquire All	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Disrupted	Not As Expected	Not As Expected	Not As Expected	Not As Expected	Not As Expected	As Expected	As Expected	Not As Expected
Reporting	Preview-Pane	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	Generated Reports	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected

MPE+ v5.8.0.153									
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android							
		Motorola Droid Turbo 2	Samsung J3	Google Pixel XL	Moto Z Force	HTC 10	Galaxy Note 3	Ellipsis 8	Galaxy Tab S2
Equipment/ User Data	IMEI	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected
	MEID/ESN	NA	NA	NA	NA	NA	NA	NA	NA
	MSISDN	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
	Calendar	Not As Expected	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	NA	NA
	Memos/ Notes	Not As Expected	Not As Expected	Not As Expected	NA	Not As Expected	Not As Expected	NA	NA
Call Logs	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	NA	NA
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	NA	NA
	Missed	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	NA	NA
SMS Messages	Incoming	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	Not As Expected	Not As Expected
MMS Messages	Graphic	Partial	As Expected	Partial	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Audio	NA	Partial	Partial	Partial	As Expected	As Expected	Not As Expected	Not As Expected
	Video	Partial	Partial	Partial	Partial	As Expected	As Expected	Not As Expected	Not As Expected
Stand-alone Files	Graphic	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
	Audio	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Partial
	Video	As Expected	As Expected	As Expected	As Expected	As Expected	As Expected	Not As Expected	Not As Expected
Application Data	Documents (txt, pdf files)	Not As Expected	Partial	Partial	Partial	Partial	Not As Expected	NA	NA

MPE+ v5.8.0.153									
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android							
		Motorola Droid Turbo 2	Samsung J3	Google Pixel XL	Moto Z Force	HTC 10	Galaxy Note 3	Ellipsis 8	Galaxy Tab S2
Social Media Data	Facebook	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	NA
	Twitter	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>Partial</i>	<i>Not As Expected</i>	NA	NA
	LinkedIn	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	NA
	Instagram	<i>Partial</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>Not As Expected</i>	NA	NA	NA
	Pinterest	NA	NA	NA	NA	NA	NA	NA	NA
	SnapChat	NA	NA	NA	NA	NA	NA	NA	NA
	WhatsApp	NA	NA	NA	NA	NA	NA	NA	NA
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>Not As Expected</i>	NA	NA
	History	NA	<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>	NA	NA
	Email	<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>	NA	NA
GPS Data	Coordinates /Geo-tagged	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	NA
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>
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>
Case File Data Protection	Modify Case Data	<i>Not As Expected</i>	<i>As Expected</i>	<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>

Table 3: Android Mobile Devices

## 4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with MPE+ v5.8.0.153.

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

- Disruption of acquisition does not provide an error message, tool freezes or gets in a loop trying to acquire the device for the iPhone 5S.
- Long contact name entries are truncated for the iPhone 6S Plus.
- Application Data (.pdf and .txt files) were not reported for the iPhone 5S and iPhone 6S Plus.
- Facebook social media data was not reported for the iPhone 5S.
- Twitter and LinkedIn social media data were partially reported, only the user profile and friends information was reported for the iPhone 5S.
- Facebook, Twitter and LinkedIn social media data was partially reported, only profile information was reported for the iPhone 6S Plus.
- Instagram social media data was not reported for the iPhone 6S Plus.
- Case file was modified and re-opened. The tool was able to present some of the data previously acquired. Some data was missing though for the iPhone 4 and iPhone 6S Plus.

### Notes:

- Physical acquisition was performed on the iPhone 4.
- Deleted data (i.e., SMS, calls, notes) was not reported for the iPhone 4.
- Model number was incorrectly reported as N90AP for the iPhone 4.
- Model number was incorrectly reported as N51AP for the iPhone 5S.
- Outgoing calls that are canceled, the tools categorizes them as “Unknown”.
- Deleted data (i.e., calendar, SMS, call logs) was reported for the iPhone 5S.
- Deleted data (i.e., SMS, Call logs) was reported for the iPhone 6S Plus.

See Table 4 below for more details.

MPE+ v5.8.0.153				
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS		
		iPhone 4	iPhone 5S	iPhone 6S Plus
Acquisition	Acquire All	As Expected	As Expected	As Expected
	Disrupted	As Expected	Not As Expected	As Expected

<b>MPE+ v5.8.0.153</b>				
<b>Test Cases – Internal Memory Acquisition</b>		<i>Mobile Device Platform: iOS</i>		
		<b>iPhone 4</b>	<b>iPhone 5S</b>	<b>iPhone 6S Plus</b>
<b>Reporting</b>	Preview-Pane	<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>
<b>Equipment/ User Data</b>	IMEI	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	MEID/ESN	<i>NA</i>	<i>NA</i>	<i>NA</i>
	MSISDN	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>PIM Data</b>	Contacts	<i>As Expected</i>	<i>As Expected</i>	<i>Partial</i>
	Calendar	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
	Memos/Notes	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Call Logs</b>	Incoming	<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>
	Missed	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>SMS Messages</b>	Incoming	<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>
<b>MMS Messages</b>	Graphic	<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>
	Video	<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>
	Audio	<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>
<b>Application Data</b>	Documents (txt, pdf files)	<i>As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>

<b>MPE+ v5.8.0.153</b>				
<b>Test Cases – Internal Memory Acquisition</b>		<i>Mobile Device Platform: iOS</i>		
		<i>iPhone 4</i>	<i>iPhone 5S</i>	<i>iPhone 6S Plus</i>
<b>Social Media Data</b>	Facebook	<i>NA</i>	<i>Not As Expected</i>	<i>Partial</i>
	Twitter	<i>NA</i>	<i>Partial</i>	<i>Partial</i>
	LinkedIn	<i>NA</i>	<i>Partial</i>	<i>Partial</i>
	Instagram	<i>NA</i>	<i>NA</i>	<i>Not As Expected</i>
	Pinterest	<i>NA</i>	<i>NA</i>	<i>NA</i>
	SnapChat	<i>NA</i>	<i>NA</i>	<i>NA</i>
	WhatsApp	<i>NA</i>	<i>NA</i>	<i>NA</i>
<b>Internet Data</b>	Bookmarks	<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>
	Email	<i>NA</i>	<i>NA</i>	<i>NA</i>
<b>GPS Data</b>	Coordinates/Geo-tagged	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Non-Latin Character</b>	Reported in native format	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Hashing</b>	Case File/Individual Files	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
<b>Case File Data Protection</b>	Modify Case Data	<i>Not As Expected</i>	<i>As Expected</i>	<i>Not As Expected</i>

**Table 4: iOS Mobile Devices**