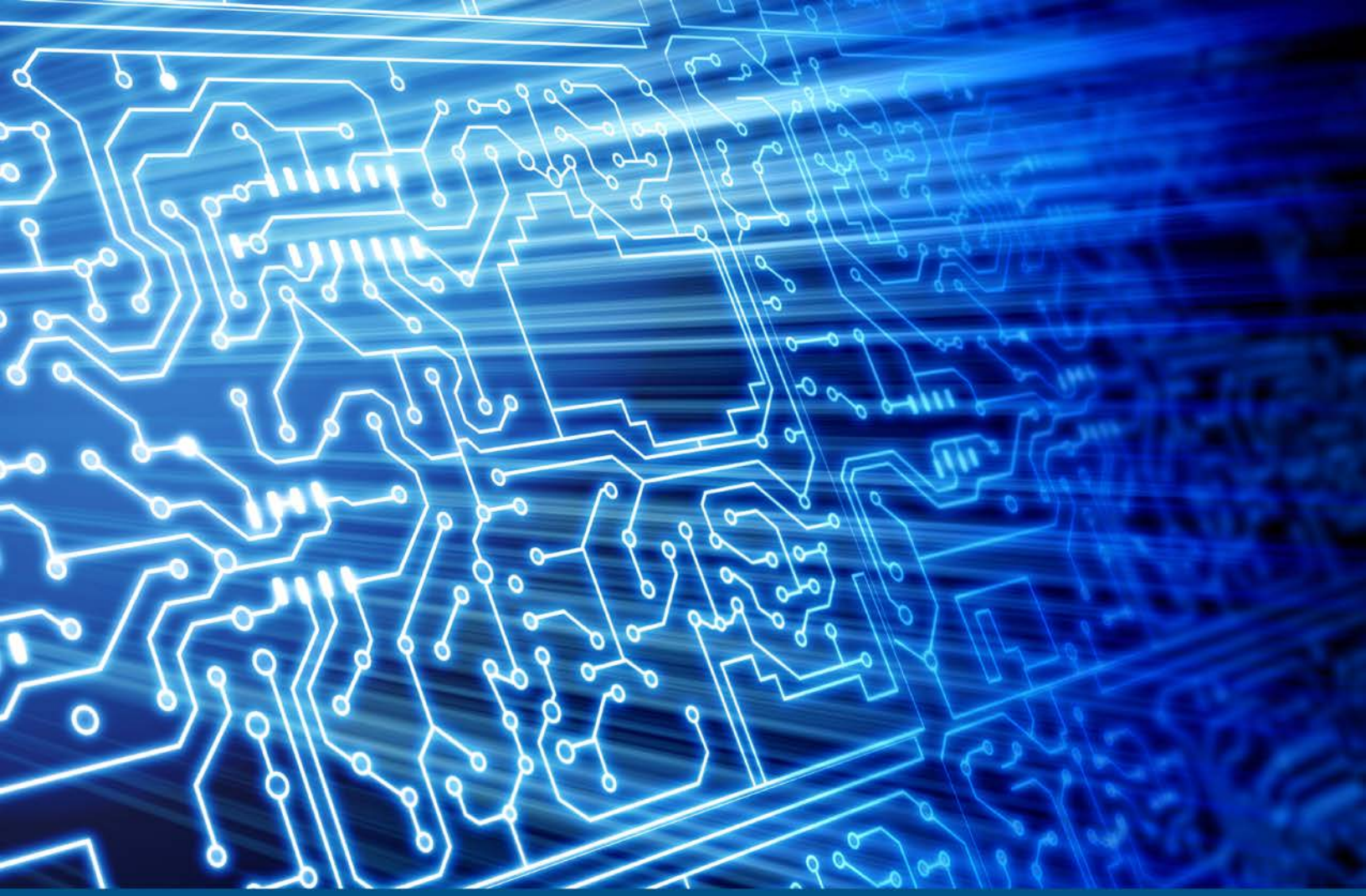

Electronic Evidence Examiner - Device Seizure (E3:DS) v1.7

Test Results for Mobile Device Acquisition Tool

June 25, 2018

Homeland Security

Science and Technology

This report was prepared for the Department of Homeland Security Science and Technology Directorate Cyber Security Division by the Office of Law Enforcement Standards of the National Institute of Standards and Technology.

For additional information about the Cyber Security Division and ongoing projects, please visit http://www.dhs.gov/science-and-technology/cyber-security-division.

June 2018

Test Results for Mobile Device Acquisition Tool:
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Contents

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 E3:DS v1.7 across supported mobile devices and associated media e.g., smart 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. The full test data is available at http://www.cftt.nist.gov/mobile_devices.htm.

Test Results for Mobile Device Acquisition Tool

Tool Tested:	Electronic Evidence Examiner Device Seizure (E3:DS)
Software Version:	v1.7
Supplier:	Paraben
Address:	39344 John Mosby Hwy Ste 277 Aldie VA 20105-2000
Tel:	(801) 796-0944
WWW:	http://www.paraben.com

1 Results Summary

Paraben's E3:DS is a stand-alone mobile device data extraction and analysis solution that supports a large variety of mobile device types containing over 26,000+ device profiles. E3:DS supports data extraction for all smartphone operating systems, a variety of feature phones, tablets, GPS, PDAs and UICCs.

E3:DS 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). 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*:**

- Metadata (i.e., graphics) for Address Book/Contact entries were not reported with the associated entry. (Devices: *iOS*)
- MMS attachments (graphic files) were displayed as thumbnails. (Devices: *Android*)

Internet Related Data:

- Internet related data (i.e., bookmarks, history) were not reported. (Devices: *Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force, HTC 10, Galaxy Tab-E and Galaxy Tab S2*)

Social media Data:

- Social media related data (i.e., Facebook, LinkedIn, Instagram) was not reported. (Devices: *Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force, HTC 10*)
- Social media related data (i.e., Facebook, LinkedIn) was not reported. (Devices: *Motorola Droid Turbo 2, Galaxy S6 Edge Plus*)
- Social media related data (i.e., Facebook) was not reported. (Devices: *Galaxy Tab-E, Galaxy Tab S2*)
- Partial social media related (i.e., user account data) for Facebook and Twitter was reported. (Device: *iPad Air*)

- **Note:** *The acquisition and reporting of social media related data extracted from a mobile device is dependent upon various factors - the state of the device (e.g., jailbroken, rooted), the data extraction method (e.g., logical, physical), the version of the app and how the data is stored.*

GPS:

- GPS related data (i.e., longitude, latitude coordinates) was not reported. (Devices: *Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force, HTC 10, Galaxy Tab-E, Galaxy Tab S2*)

For more test result details see section 4.

2 Mobile Devices

The following table lists the mobile devices used for testing E3:DS v1.7.

Make	Model	OS	Firmware	Network
Apple	iPhone 5S	iOS 7.1 (11D167)	2.18.02	CDMA
Apple	iPhone 6S Plus	iOS 9.2.1 (13C75)	1.23.00	CDMA
Apple	iPhone 7 Plus	iOS 10.2 (14C92)	1.33.00	CDMA
Apple	iPad Mini	iOS 9.2.1 (13B143)	4.32.00	CDMA
Apple	iPad Air	iOS 7.1 (11D167)	2.18.02	CDMA
Apple	iPad Pro	iOS 9.2.1 (13C75)	4.52.00	CDMA
Samsung	Galaxy S3 SGH-1747	Android 4.1.2	1747UCDMG2	GSM
Samsung	Galaxy S5 SM-G900V	Android 4.2.2	G900V.05	CDMA
Motorola	Droid Turbo2	Android 5.1.1	LCK23.130-23	CDMA
Samsung	Galaxy S6 Edge Plus – SM-G928V	Android 5.1.1	LMY47X.G928VVRU2AOJ2	CDMA
Samsung	J3 – SM-J320V	Android 6.0.1	MMB29M.J320VVRU2AP12	CDMA
Google	Pixel XL	Android 7.1.1	NMF26U	CDMA
Samsung	GS7 – SM-G930V	Android 6.0.1	MMB29M.G930VVRU4AP13	CDMA
Samsung	GS7 Edge SM-G935V	Android 6.0.1	MMB29M.G935VVRS4APH1	CDMA
Motorola	D 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	Android 4.4.2	KOT49H.N900VVRUCNC4	CDMA
Samsung	Galaxy Tab-E	Android 5.1.1	LMY47X.T567VVRU1AOH1	CDMA
Samsung	Galaxy Tab S2	Android 5.1.1	LMY47X.T817BVRU2AOJ2	CDMA

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

E3:DS v1.7 was installed on Windows 10 Pro v10.0.14393 Build 14393.

3.2 Internal Memory Data Objects

E3:DS v1.7 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	*Regular Length*
	Maximum Length
	Special Character
	Blank Name
	Regular Length, email
	Regular Length, graphic
	Regular Length, Address
	Deleted Entry
	Non-Latin Entry
	Contact Groups
PIM Data: Datebook/Calendar; Memos	*Regular Length*
	Maximum Length
	Deleted Entry
	Special Character
	Blank Entry
Call Logs	*Incoming*
	Outgoing
	Missed
	Incoming – Deleted
	Outgoing – Deleted
	Missed - Deleted
Text Messages	*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

Data Objects	Data Elements
Text Messages	*Outgoing EMS – Deleted*
	Non-Latin SMS/EMS
MMS Messages	*Incoming Audio*
	Incoming Graphic
	Incoming Video
	Outgoing Audio
	Outgoing Graphic
	Outgoing Video
Application Data	*Device Specific App Data*
Stand-alone data files	*Audio*
	Graphic
	Video
	Audio – Deleted
	Graphic - Deleted
	Video - Deleted
Internet Data	*Visited Sites*
	Bookmarks
	E-mail
Location Data	*GPS Coordinates*
	Geo-tagged Data
Social Media Data	*Facebook*
	Twitter
	LinkedIn
	Instagram

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 E3:DS v1.7.

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 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 E3:DS v1.7.

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

- Graphic files associated with the corresponding MMS message are displayed as a thumbnail for all Android devices.
- Social media related data (i.e., Facebook, LinkedIn) was not reported for the Motorola Droid Turbo 2 and Galaxy S6 Edge Plus.
- Social media related data (i.e., Facebook, LinkedIn, Instagram) was not reported for the Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force and HTC 10.
- Social media related data (i.e., Facebook) was not reported for the Galaxy Tab-E and Galaxy Tab S2.
- Internet related data (i.e., bookmarks, browser history) were not reported for the Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force, HTC 10, Galaxy Tab-E and Galaxy Tab S2.
- GPS related data (i.e., maps, longitude, latitude coordinates) was not reported for the Motorola Droid Turbo 2, Galaxy S6 Edge Plus, Samsung J3, Google Pixel XL, Samsung GS7, Samsung GS7 Edge, Motorola D Force, HTC 10, Galaxy Tab-E and Galaxy Tab S2.

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

E3:DS v1.7								
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*						
		Galaxy S3	Galaxy S5	Motorola Droid Turbo 2	Galaxy S6 Edge Plus	Samsung J3	Google Pixel XL	Samsung GS7/GS7 Edge
Acquisition	Acquire All	*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*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	MEID/ESN	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	MSISDN	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*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*
	Memos/Notes	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
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*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
	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*
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 (txt, pdf files)	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*

E3:DS v1.7								
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*						
		Galaxy S3	Galaxy S5	Motorola Droid Turbo 2	Galaxy S6 Edge Plus	Samsung J3	Google Pixel XL	Samsung GS7/GS7 Edge
Social Media Data	Facebook	*NA*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Twitter	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	LinkedIn	*NA*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Instagram	*NA*	*NA*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Internet Data	Bookmarks	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	History	*As Expected*	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
	Email	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPS Data	Coordinates/ Geo-tagged	*As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*	*Not As Expected*
Non-Latin Character	Reported in native format	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*NA*	*As Expected*	*As Expected*
Hashing	Case File/ Individual Files	*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*

Table 3a: Android Mobile Devices

E3:DS v1.7						
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*				
		Motorola D Force	HTC 10	Galaxy Note 3	Galaxy Tab-E	Galaxy Tab S2
Acquisition	Acquire All	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Disrupted	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Reporting	Preview-Pane	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Generated Reports	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Equipment/ User Data	IMEI	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	MEID/ESN	*NA*	*NA*	*NA*	*NA*	*NA*
	MSISDN	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
PIM Data	Contacts	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Calendar	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Memos/Notes	*NA*	*NA*	*NA*	*NA*	*NA*
Call Logs	Incoming	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
	Outgoing	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
	Missed	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
SMS Messages	Incoming	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
	Outgoing	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
MMS Messages	Graphic	*Partial*	*Partial*	*Partial*	*NA*	*NA*
	Audio	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
	Video	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*
Stand-alone Files	Graphic	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Audio	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Video	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Application Data	Documents (txt, pdf files)	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*

E3:DS v1.7						
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: Android*				
		Motorola D Force	HTC 10	Galaxy Note 3	Galaxy Tab-E	Galaxy Tab S2
Social Media Data	Facebook	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	Twitter	*NA*	*NA*	*NA*	*NA*	*NA*
	LinkedIn	*Not As Expected*	*Not As Expected*	*As Expected*	*NA*	*NA*
	Instagram	*Not As Expected*	*Not As Expected*	*NA*	*As Expected*	*As Expected*
Internet Data	Bookmarks	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	History	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
	Email	*NA*	*NA*	*NA*	*NA*	*NA*
GPS Data	Coordinates/ Geo-tagged	*Not As Expected*	*Not As Expected*	*As Expected*	*Not As Expected*	*Not As Expected*
Non-Latin Character	Reported in native format	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*NA*
Hashing	Case File/ Individual Files	*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*

Table 3b: Android Mobile Devices

4.2 iOS Mobile Devices

The internal memory contents for iOS devices were acquired and analyzed with E3:DS v1.7.

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

- Graphic files associated with Contact/Address Book entries were not reported with the associated entry for all iOS devices.
- Partial (i.e., user account information) Facebook and Twitter related data was reported for the iPad Air.

See Table 4 below for more details.

E3:DS v1.7							
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: iOS*					
		iPhone 5S	iPhone 6S Plus	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
Acquisition	Acquire All	*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*
Reporting	Preview-Pane	*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*
Equipment/ User Data	IMEI	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	MEID/ESN	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
	MSISDN	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
PIM Data	Contacts	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*	*Partial*
	Calendar	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Memos/Notes	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Call Logs	Incoming	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*	*NA*
	Outgoing	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*	*NA*
	Missed	*As Expected*	*As Expected*	*As Expected*	*NA*	*NA*	*NA*

E3:DS v1.7							
Test Cases – Internal Memory Acquisition		*Mobile Device Platform: iOS*					
		iPhone 5S	iPhone 6S Plus	iPhone 7 Plus	iPad Mini	iPad Air	iPad Pro
SMS Messages	Incoming	*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*
MMS Messages	Graphic	*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*
	Video	*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*
	Audio	*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*
Application Data	Documents (txt, pdf files)	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Social Media Data	Facebook	*As Expected*	*NA*	*NA*	*NA*	*Partial*	*NA*
	Twitter	*As Expected*	*NA*	*NA*	*NA*	*Partial*	*NA*
	LinkedIn	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
	Instagram	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Internet Data	Bookmarks	*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*
	Email	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPS Data	Coordinates/ Geo-tagged	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Non-Latin Character	Reported in native format	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*	*As Expected*
Hashing	Case File/ Individual Files	*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*

Table 4: 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 E3:DS v1.7.

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

See Table 5 below for more details.

E3:DS v1.7		
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*
Acquisition	Acquire All	*As Expected*
	Selected All	*As Expected*
	Select Individual	*As Expected*
Case File Data Protection	Modify Case Data	*As Expected*
Password Protected SIM Acquire	Acquisition of Protected SIM	*As Expected*
PIN/PUK Attempts	PIN attempts reported	*As Expected*
	PUK attempts reported	*As Expected*
Non-ASCII Character	Non-ASCII characters	*As Expected*
Hashing	Hashes reported for acquired data objects	*As Expected*

Table 5: Universal Integrated Circuit Cards