

Data Objects	Data Elements
Address Book Entries	
	<i>Regular Length</i>
	<i>Maximum Length</i>
	<i>Special Character</i>
	<i>Blank Name</i>
	<i>Regular Length, email</i>
	<i>Regular Length, graphic</i>
	<i>Regular Length, Address</i>
	<i>Deleted Entry</i>
	<i>Non-Latin Entry</i>
	<i>Contact Groups</i>
PIM Data	
Datebook/Calendar	<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-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>

Data Objects	Data Elements
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>

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 (e.g., Android, iOS) and the make and model of mobile devices used for testing XRY v7.0.1.37853.

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 with XRY v7.0.1.37853 and analyzed with XRY Reader v6.17.0.

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

- Partial social media related data for Twitter (i.e., profile pics, pictures, emoticons) were reported for the Galaxy S6. Profile data, personal messages and tweets were not reported.
- GPS (longitude / latitude coordinates) for map routes were not reported for all Android devices.

See Table 3 below for more details.

XRY v7.0.1.37853				
Test Cases – Internal Memory Acquisition		Mobile Device Platform: Android		
		Galaxy S6	Galaxy Tab-E	Galaxy Tab S2
Acquisition	Acquire All	As Expected	As Expected	As Expected
	Disrupted	As Expected	As Expected	As Expected
Reporting	Preview-Pane	As Expected	As Expected	As Expected
	Generated Reports	As Expected	As Expected	As Expected
Equipment/ User Data	IMEI	As Expected	As Expected	As Expected
	MEID/ESN	NA	NA	NA
	MSISDN	As Expected	As Expected	As Expected
PIM Data	Contacts	As Expected	As Expected	As Expected
	Calendar	As Expected	NA	NA
	Memos/Notes	NA	NA	NA
Call Logs	Incoming	As Expected	NA	NA
	Outgoing	As Expected	NA	NA
	Missed	As Expected	NA	NA

XRY v7.0.1.37853				
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Android</i>		
		Galaxy S6	Galaxy Tab-E	Galaxy Tab S2
SMS Messages	Incoming	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	Outgoing	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
MMS Messages	Graphic	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	Audio	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
	Video	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
Stand-alone Files	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>
Application Data	Documents (txt, pdf files)	<i>As Expected</i>	<i>NA</i>	<i>NA</i>
Social Media Data	Facebook	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
	Twitter	<i>Partial</i>	<i>NA</i>	<i>NA</i>
	LinkedIn	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
	Instagram	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
Internet Data	Bookmarks	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
	History	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
	Email	<i>Not As Expected</i>	<i>NA</i>	<i>NA</i>
GPS Data	Coordinates/Geo-tagged	<i>Not As Expected</i>	<i>Not As Expected</i>	<i>Not As Expected</i>
Non-Latin Character	Reported in native format	<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>
Case File Data Protection	Modify Case Data	<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 with XRY v7.0.1.37853 and analyzed with XRY Reader v6.17.0.

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

- Social media related data i.e., profile information, status updates, personal messages, graphics were not reported for Facebook or Instagram for all iOS devices. Username, application files and application information are reported.
- Partial social medial related data i.e., personal messages, graphics, Username, application files and application information for Twitter and LinkedIn were reported for all iOS devices.

See Table 4 below for more details.

XRY v7.0.1.37853						
Test Cases – Internal Memory Acquisition		Mobile Device Platform: iOS				
		iPhone 6	iPhone 6S	iPhone 6S Plus	iPad Mini	iPad Pro
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	As Expected	As Expected	As Expected	As Expected	As Expected
Call Logs	Incoming	As Expected	As Expected	As Expected	As Expected	As Expected
	Outgoing	As Expected	As Expected	As Expected	As Expected	As Expected
	Missed	As Expected	As Expected	As Expected	As Expected	As Expected

XRY v7.0.1.37853

Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: iOS</i>				
		<i>iPhone 6</i>	<i>iPhone 6S</i>	<i>iPhone 6S Plus</i>	<i>iPad Mini</i>	<i>iPad Pro</i>
SMS Messages	Incoming	<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>
MMS Messages	Graphic	<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>
	Video	<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>
	Audio	<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>
Application Data	Documents (txt, pdf files)	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Social Media Data	Facebook	<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>
	Twitter	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	LinkedIn	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>	<i>Partial</i>
	Instagram	<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>
Internet Data	Bookmarks	<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>
	Email	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
GPS Data	Coordinates/Geo-tagged	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
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>
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>
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>

Table 4: iOS Mobile Devices

4.3 Blackberry / Windows / Feature Phones

The internal memory contents for the feature phone was acquired with XRY v7.0.1.37853 and analyzed with XRY Reader v6.17.0.

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

- Subscriber related data (i.e., MSISDN) was not reported for the BlackBerry Z10 or BlackBerry Z30.
- Contacts containing associated graphic files were not reported with the corresponding *contact* for the BlackBerry Z10 or the BlackBerry Z30.
- Contacts containing metadata e.g., URLs, Addresses (city, state, zip) were not reported for the BlackBerry Z10, BlackBerry Z30.
- Partial social media related data (i.e., profile pictures) were reported for the BlackBerry Z10
- Social media related data was not reported for the BlackBerry Z30.
- Internet related data (i.e., visited sites, bookmarks) are not reported for the Samsung Rugby 3.
- E-mail related data is not reported for the BlackBerry Z10 or the BlackBerry Z30.
- GPS related data is not reported for the Samsung Rugby 3.

NOTES:

- ▶ For the HTC Win 8x data extraction of only pictures and video is supported.
- ▶ For the Samsung Rugby 3 data extraction of call logs and email are not supported.

See Table 5 below for more details.

XRY v7.0.1.37853					
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Blackberry, Windows, Feature phones</i>			
		Blackberry Z10	Blackberry Z30	HTC Win 8x	Samsung Rugby 3
Acquisition	Acquire All	<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>
Reporting	Preview-Pane	<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>

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Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Blackberry, Windows, Feature phones</i>			
		Blackberry Z10	Blackberry Z30	HTC Win 8x	Samsung Rugby 3
Equipment/ User Data	IMEI/IMSI	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
	MEID/ESN	NA	NA	NA	NA
	MSISDN	<i>Not As Expected</i>	<i>Not As Expected</i>	NA	<i>As Expected</i>
PIM Data	Contacts	<i>Partial</i>	<i>Partial</i>	NA	<i>As Expected</i>
	Calendar	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
	Memos/Notes	NA	NA	NA	<i>As Expected</i>
Call Logs	Incoming	<i>As Expected</i>	<i>As Expected</i>	NA	NA
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	NA	NA
	Missed	<i>As Expected</i>	<i>As Expected</i>	NA	NA
SMS Messages	Incoming	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
	Outgoing	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
MMS Messages	Graphic	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
	Audio	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
Stand-alone Files	Graphic	<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>	NA	<i>As Expected</i>
	Video	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>
Application Data	Documents (txt, pdf files)	<i>As Expected</i>	<i>As Expected</i>	NA	<i>As Expected</i>
Social Media Data	Facebook	<i>Partial</i>	<i>Not As Expected</i>	NA	NA
	Twitter	<i>Partial</i>	<i>Not As Expected</i>	NA	NA
	LinkedIn	<i>Partial</i>	<i>Not As Expected</i>	NA	NA
	Instagram	NA	NA	NA	NA

XRY v7.0.1.37853					
Test Cases – Internal Memory Acquisition		<i>Mobile Device Platform: Blackberry, Windows, Feature phones</i>			
		Blackberry Z10	Blackberry Z30	HTC Win 8x	Samsung Rugby 3
Internet Data	Bookmarks	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>Not As Expected</i>
	History	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>Not As Expected</i>
	Email	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
GPS Data	Coordinates/Geo-tagged	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>Not As Expected</i>
Non-Latin Character	Reported in native format	<i>As Expected</i>	<i>As Expected</i>	<i>NA</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>
Case File Data Protection	Modify Case Data	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>	<i>As Expected</i>

Table 5: Feature Phones