

Test Summary Report

Universal Acceptance of Popular Social Media Applications

for

Universal Acceptance Steering Group

by

Catalyst.Net Limited

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Commercial in Confidence

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1 Executive Summary

The Universal Acceptance Steering Group (UASG) engaged Catalyst to test 23 social media applications and determine whether they created a link where expected and didn't create a link where not expected. The 23 applications were evaluated across five platforms using 53 test cases for a combined 6,095 data points. The UASG is interested in whether the applications treat all domain names (including Top Level Domains (TLDs) that are new, long, and in non-ASCII characters) and all email addresses (including Unicode in the mailbox name) equally.

Examples where we expected links to be created include:

www.ua-test.technology
www.普遍接受-测试.top
www.ua-test.世界|
info2@ua-test.technology
info3@普遍接受-测试.top
info4@ua-test.世界

Examples where we didn't expect links to be created include:

http:example.com
http://example.a
http://example..ab

A full list of the tests and expectations can be found in section 4 Appendix A - Test Use Cases.

High level observations

Observations from these tests are detailed in section 3 Results Overview. There were seven applications rated 'Good or above average', thirteen 'Average' and three 'Poor'.

The Telegram social media application stood head and shoulders above the other applications with an aggregate score of 90.94%, with the next best application being BBM at 63.21%.

The analysis also looked at the differences in the test results across the different Operating Systems. Android seemed to have a slightly higher rate of Universal Acceptance linkification compliance compared to the other four platforms.

The desktop platforms for Linux, Mac and Windows returned exactly the same score for each application, with the exception of Tumblr, where the Windows platform performed 25% better than the others.

The email address Universal Acceptance linkification test success rate was significantly lower than the domain names success rates, which brought down the overall success rates for almost all of the applications. This was noticeably true for social media applications in the messaging category, such as Facebook Messenger and WhatsApp. Seven social media applications did not linkify any email addresses in the test cases.

Applications Domain Name and Email Linkification Scores – by application popularity

Application	Domain Name Score	Email Score	Comment
Facebook	88.46%	0.00%	No support for email linking
WhatsApp	63.08%	37.04%	
Facebook Messenger	76.92%	5.19%	Only supports email linking on Android
QQ	23.08%	11.11%	Only supports linking on iOS
WeChat	25.00%	9.26%	
Qzone	26.92%	0.00%	No support for email linking
Tumblr	40.00%	14.07%	
Instagram	11.54%	0.00%	
Twitter	40.00%	14.07%	No support for email linking
Baidu Tieba	30.77%	0.00%	No support for email linking
Skype	68.46%	8.15%	No support for email linking on Desktop Browsers
Sina Weibo	7.69%	0.00%	
Viber	82.69%	37.04%	
Renren	16.92%	0.00%	No support for email linking
Line	67.31%	25.93%	
Snapchat	32.69%	24.07%	No support for domain name linking on Android
YY	21.15%	0.00%	No support for email linking
Linkedin	81.54%	12.59%	
VK	46.92%	19.26%	
Pinterest	16.92%	17.04%	No support for linking on iOS
BBM	67.31%	59.26%	
Telegram	89.23%	92.59%	Best overall link support
KakaoTalk	69.23%	25.93%	

The Chinese ‘open dot’ character support failed in all applications except for Skype and LinkedIn, both on desktop browsers. Surprisingly, considering their widespread use in the Chinese population, the Chinese-language social media applications had the same failure rates as the other applications.

ASCII in TLDs, domains and usernames clearly increased linkification success. Punycode, being expressed in ASCII, was more successful than the corresponding Unicode-based expression.

The detailed results for each application are found in section 7 Appendix D - Specific Results, which provides a detailed outline of each application’s linkification compliance to Universal Acceptance, in the five platforms. The success rates for linkification by test case can be viewed in 5 Appendix B – Test Case Success Rates.

Future tests

Although not all the applications were able to be set up for 100% automated testing, the generated results for most of those completed automated tests are provided with this report. A number of applications that had complete automated tests were retested manually anyway to provide consistency, particularly those that required manual authentication to be done before the automated tests could be executed.

The test results do achieve the aim of establishing a baseline for comparison of Universal Acceptance linkification for these applications in future tests.

A detailed brief of test considerations for future testing is provided in the section 6.7 Future Test Considerations. It is noted there that all desktop testing could probably be satisfactorily accepted by performing the tests in only one of the desktop platforms.

It is recommended that, in view of the many challenges experienced in this exercise to automate all tests, future testing should be made fully manual.

2 Introduction

2.1 Project Brief

The Universal Acceptance Steering Group (UASG) is focused on helping application owners, IT managers, software developers and website owners to keep pace with changes in DNS and email standards, thereby ensuring Universal Acceptance is present in all systems. Linkification is the creation of links to websites and email addresses commonly performed in social media communications applications. The UASG engaged Catalyst to test the acceptance of gTLDs (generic Top Level Domains) in social media applications, to determine whether linkification of all gTLDs is done as expected.

The test cases used for URLs and email addresses for linkification verification are defined in the documents titled [Use Cases for UA Readiness Evaluation](#) (UASG004) and [Quick Guide to Linkification](#) (UASG010).

2.2 Test Objectives

The objectives of these tests were:

1. To assess common social media applications for their compliance with universal acceptance guidelines relating to linkification of domain names and email addresses.
2. To use the initial test results as a baseline for future tests.
3. To develop automated repeatable tests so that future testing could be done more efficiently, producing automated reports in less time, and with little manual intervention. NB: This was not successful. See 6 Appendix C - Test Methodology for details.
4. To provide these results as evidence for initiating discussions with application, browser and operating system developers, to elicit improvements on their Universal Acceptance compliance levels.

2.3 Report Audience

The initial audience of this report are the stakeholders of the Universal Acceptance Steering Group (UASG). It is the intention of UASG that this report will be made public from their website and be used by developers of the social media applications to increase compliance of domain name and email linkification. These reports may also be used to initiate discussions with stakeholders of the various social media applications regarding Universal Acceptance guidelines.

2.4 Report Format

The testing has produced a significant amount of collateral. To allow for as much of this to be accessible and downloadable as possible, the report has been formatted to provide key commentary and observations in the main document, while significant detailed test results, testing methodology and other details are presented in the appendices. These appendices will be separate documents. Also delivered with the report will be a comprehensive results spreadsheet and generated test reports from automated tests that were completed.

The next section 3 Results Overview details the overall results, with section 3.2 General Observations providing observations of trends and patterns from the test results.

3 Results Overview

3.1 Test Execution Summary

There were 6095 test cases completed during the life-cycle of UASG universal acceptance testing for social media. This included the 23 popular social media applications specified in 6.1.1 Social Media Applications Scope, the five platforms specified in 6.1.2 Test Platform Scope and 53 test cases covering both UASG004 and UASG010, specified in 6.1.3 Test Case Scope. The test approach was a combination of automation and manual testing as specified in section 6.3 Test Approach. Specific results for each application are described in section 7 Appendix D - Specific Results.

3.1.1 Overall consolidated results summary

The score used for each application is derived from the average of scores from all the tests in all the platforms tested. Seven applications are defined as above average, while three applications are defined as having fared poorly. The following table lists the applications in order of the best aggregate score to the worst. Individual Domain Name linkification, Email Address linkification and Total aggregate scores are shown per application.

It is noted that Telegram performed exceptionally well compared to the other applications in the test set.

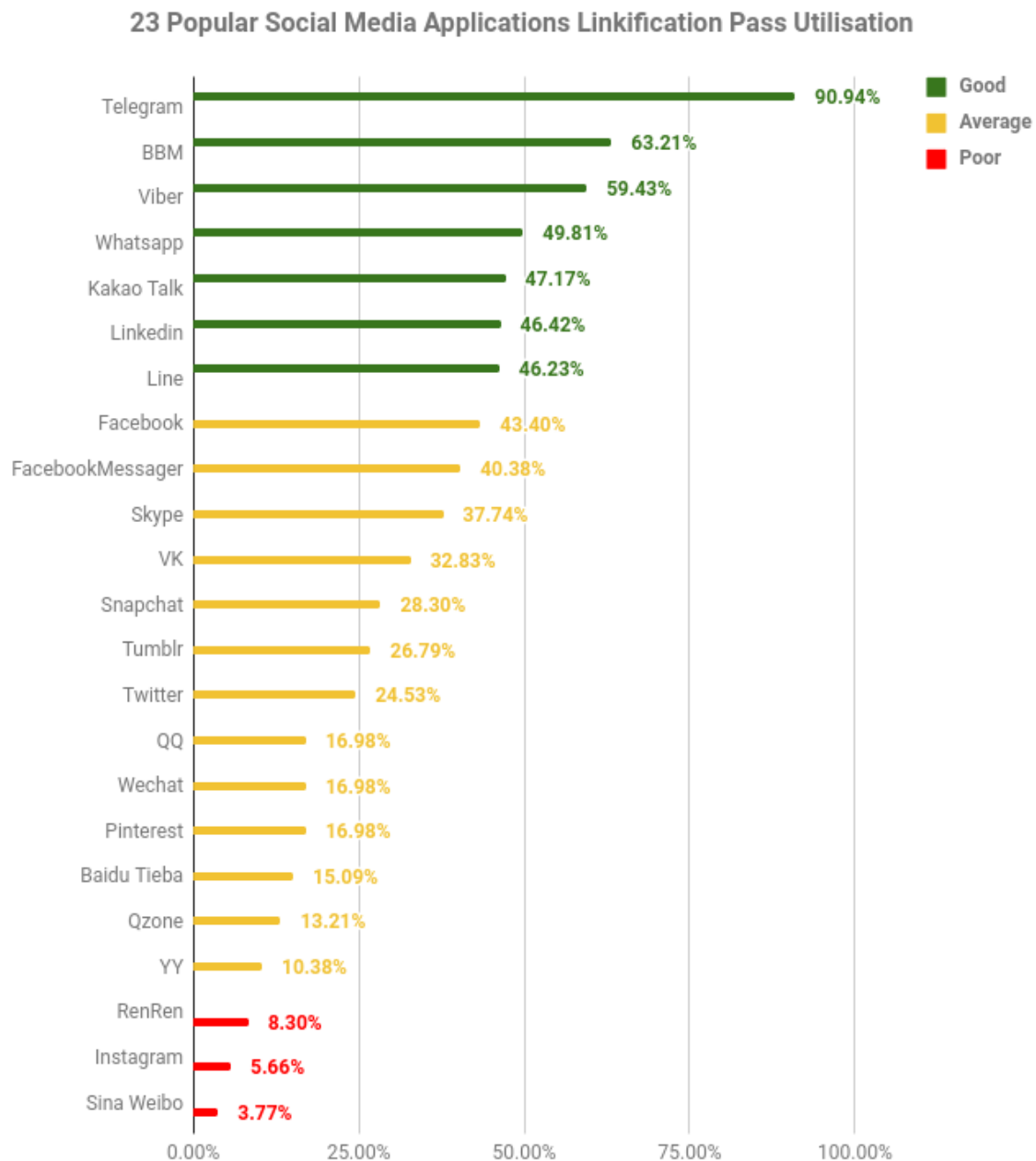
Application	WWW	Email	All
Telegram	89.23%	92.59%	90.94%
BBM	67.31%	59.26%	63.21%
Viber	82.69%	37.04%	59.43%
Whatsapp	63.08%	37.04%	49.81%
Kakao Talk	69.23%	25.93%	47.17%
Linkedin	81.54%	12.59%	46.42%
Line	67.31%	25.93%	46.23%
Facebook	88.46%	0.00%	43.40%
Facebook Messenger	76.92%	5.19%	40.38%
Skype	68.46%	8.15%	37.74%
VK	46.92%	19.26%	32.83%
Snapchat	32.69%	24.07%	28.30%
Tumblr	40.00%	14.07%	26.79%
Twitter	50.00%	0.00%	24.53%
Pinterest	16.92%	17.04%	16.98%
QQ	23.08%	11.11%	16.98%
WeChat	25.00%	9.26%	16.98%
Baidu Tieba	30.77%	0.00%	15.09%
QZone	26.92%	0.00%	13.21%
YY	21.15%	0.00%	10.38%
RenRen	16.92%	0.00%	8.30%
Instagram	11.54%	0.00%	5.66%
Sina Weibo	7.69%	0.00%	3.77%

A scale for identifying the thresholds for good, average and poor performance is listed below. The method used to derive the threshold definitions is specified in section 6.5 Threshold Definition.

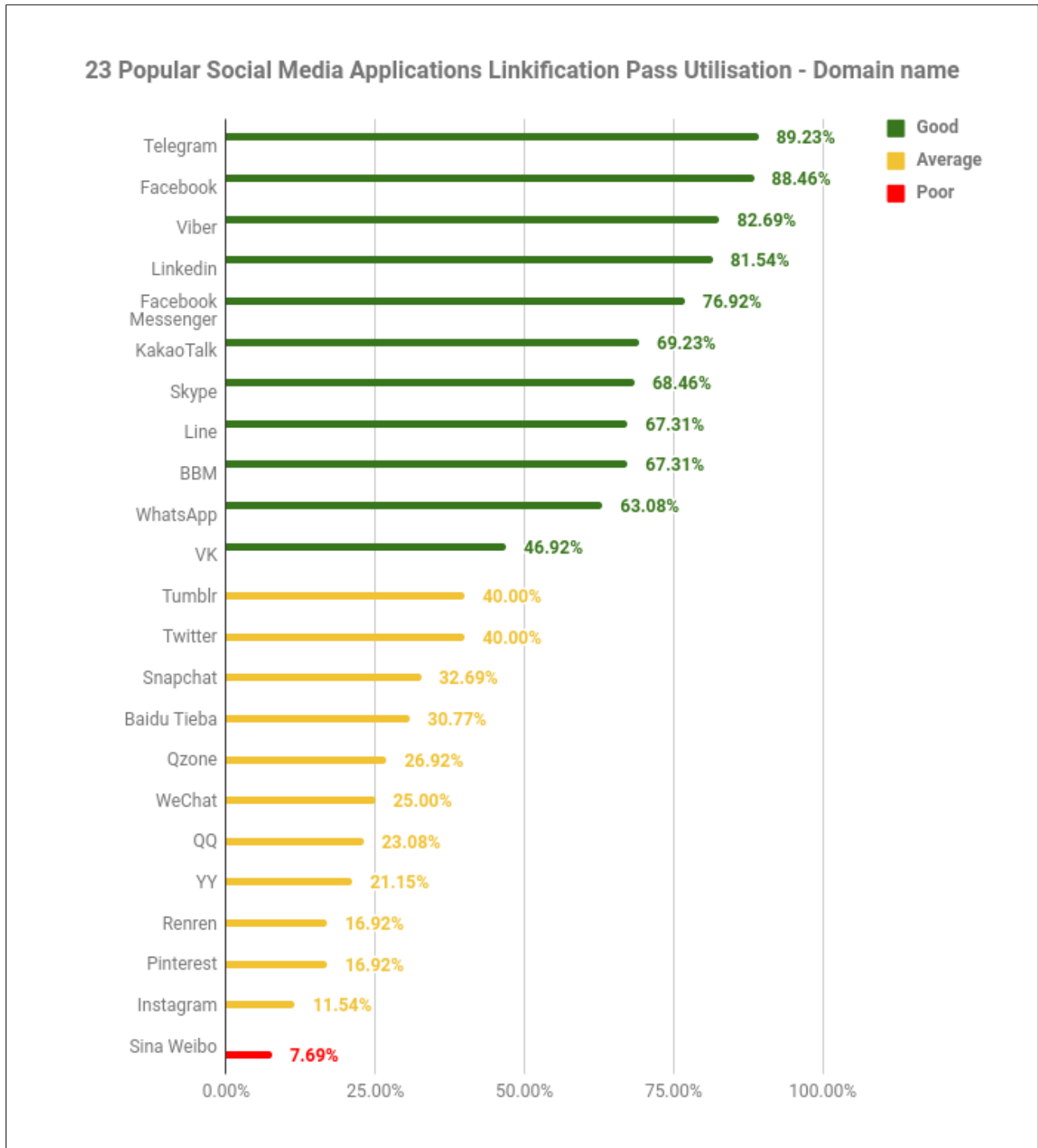
The following table labelled '23 Popular Social Media Applications Linkification Pass Utilisation' lists the applications with the highest test score to the lowest test score overall for linkification acceptance.

Linkification	Conditions	Assertions	Colour
Success Percentage	> 45%	Good or above average	Green
	>= 10% and <= 45 %	Average	Yellow
	< 10%	Poor	Red

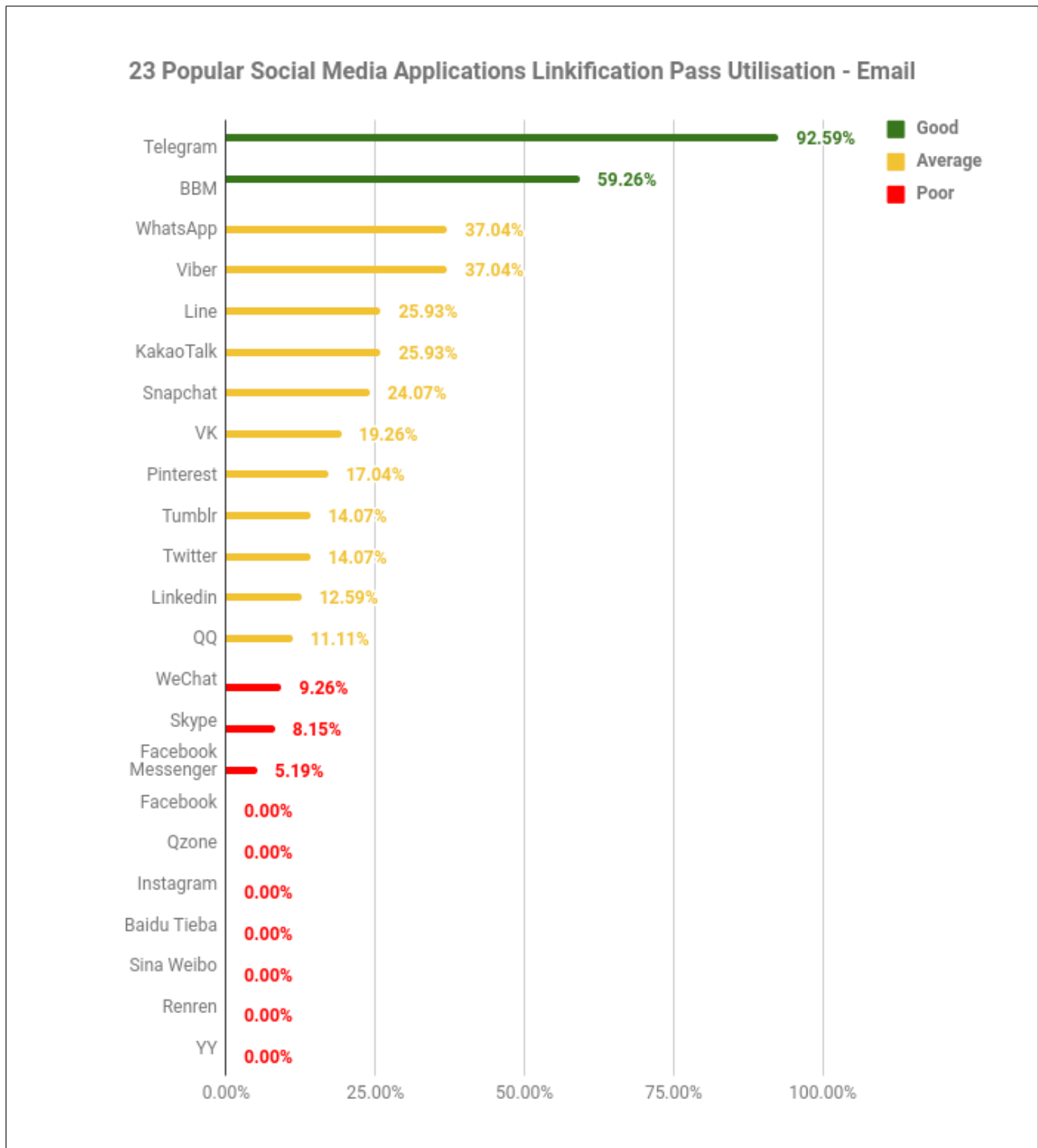
Overall Linkification Scores



Linkification Scores for Domain Names



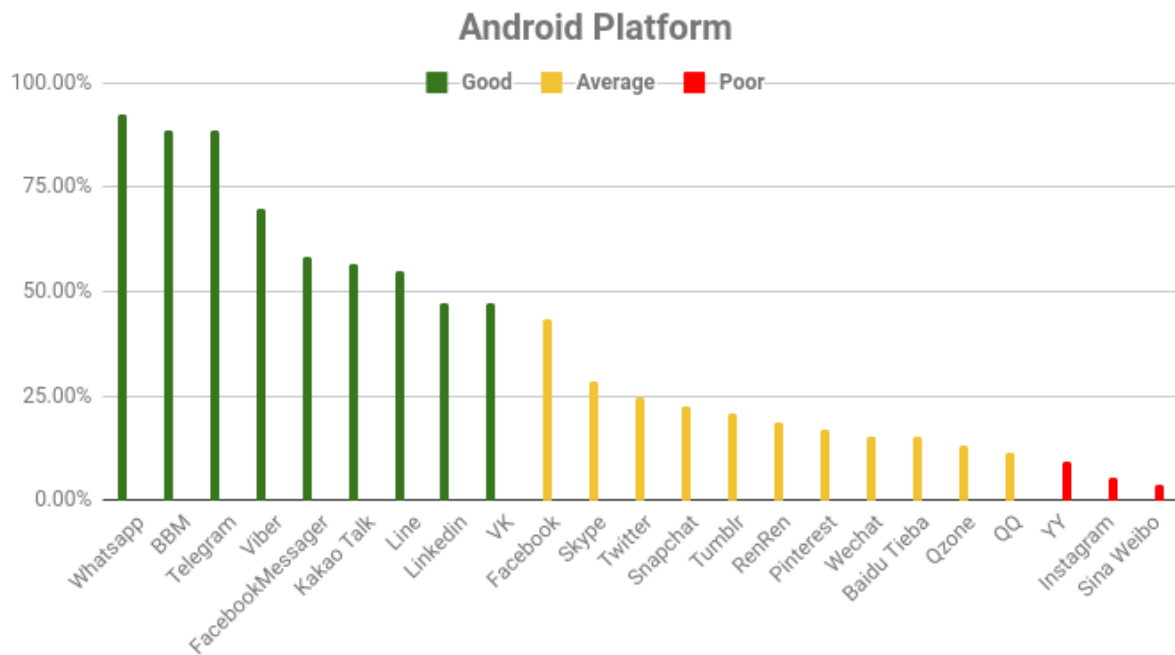
Linkification Scores for Email



3.1.2 Android platform summary

On the Android platform, WhatsApp, BBM and Telegram, Viber, Facebook Messenger, Kakao Talk, Line, LinkedIn and VKontakte's linkification acceptance scores were above 45% (good/above average), shown in green on the chart. YY, Instagram and Sina Weibo scored under 10% (poor), in red. The other 11 applications from Facebook to QQ scored average ratings, in yellow.

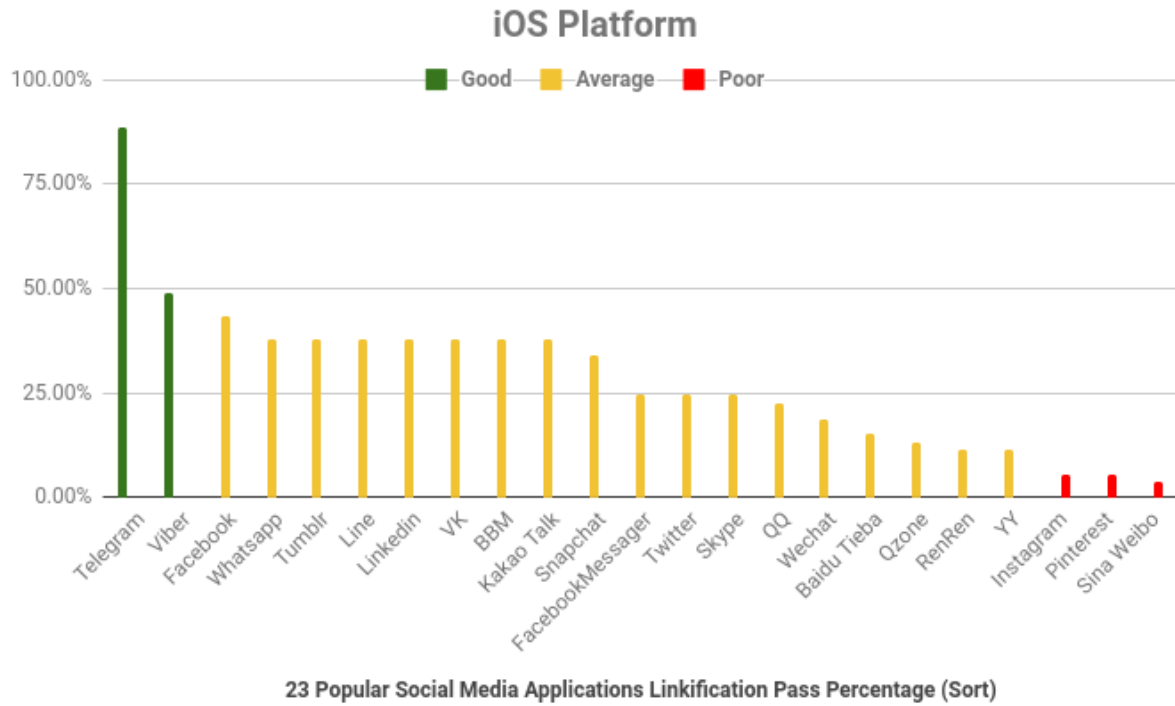
Generally, a higher rate of test passes was recorded for the Android platform than for the other platforms.



23 Popular Social Media Applications Linkification Pass Percentage (Sort)

3.1.3 iOS platform summary

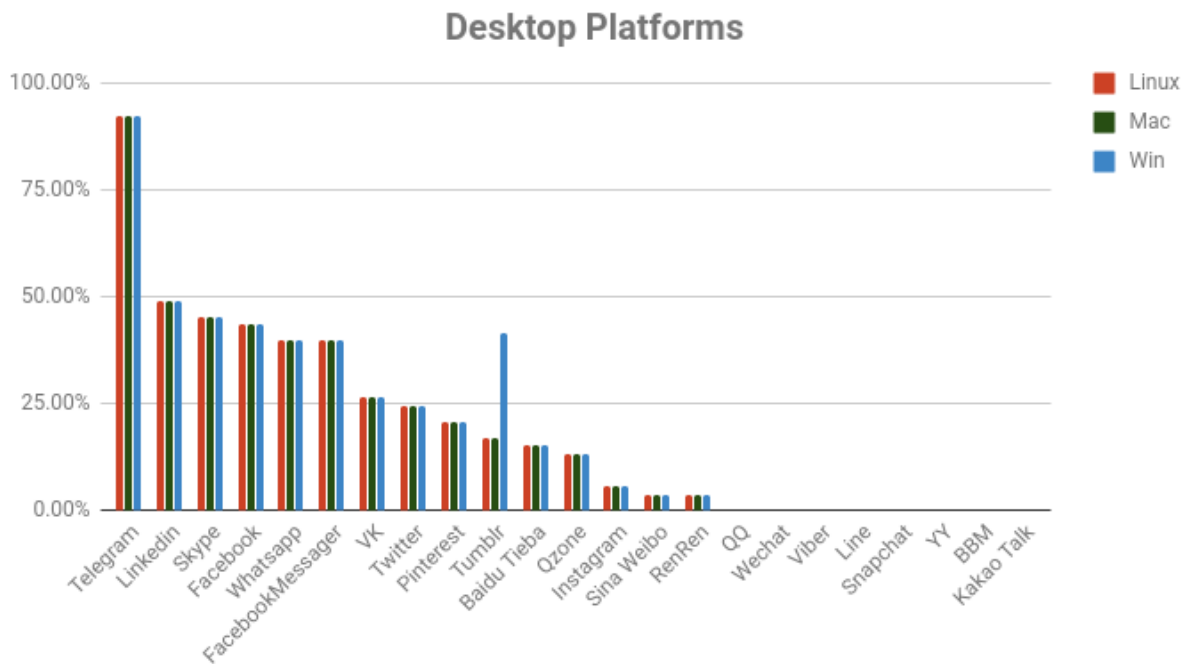
On the iOS platform, only Telegram and Viber's linkification acceptance scores were good or above average. Instagram, Pinterest and Sina Weibo's scores were poor. The other 18 applications were average.



3.1.4 Desktop platform summary

For desktop platforms, the linkification acceptance scores on Linux, Mac and Windows are most consistent, except for Tumblr on Windows/IE. Telegram, LinkedIn and Skype's scores were good or above average. Instagram, Sina Weibo and Renren's scores were poor. The other nine applications got average scores.

Note that eight of the target social media applications have no versions that are supported on desktop browsers, so there are no test data against them.

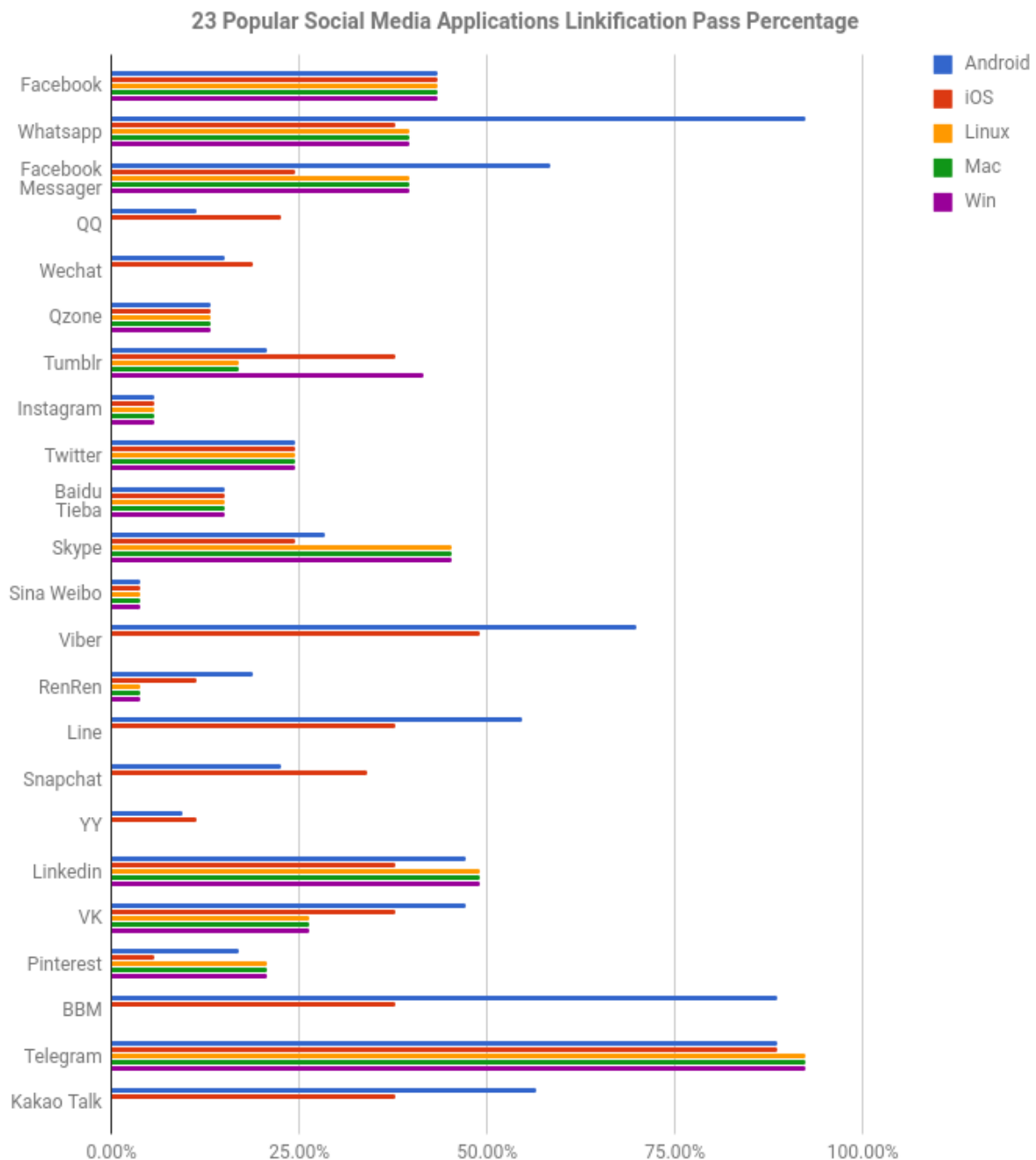


Desktop: 23 Popular Social Media Applications Linkification Pass Percentage (Sort)

3.1.5 Overall Platform Summary

The overall summary on all five platforms is shown in the table below in order of application popularity. Popularity is identified in terms of number of users for that application. For most of the popular social media applications, linkification acceptance is not up to 45%.

Linkification acceptance for Telegram is best overall, although WhatsApp and BBM are ahead of it in the Android test results. Linkification acceptance on Sina Weibo and Instagram is poor.



3.2 General Observations

3.2.1 Summary

- Web URL linkification success rates are much better than email address linkification success rates.
- Some applications (Facebook, QZone, Twitter, Baidu Tieba, RenRen, YY, Sina Weibo) do not linkify any email addresses at all
- The Chinese 'open dot' character test fails everywhere except for Skype and LinkedIn, both on browsers.
- Comparing all results per platform, Android performs better than all the other platforms. iOS and the three desktop browsers have success rates that are about equal.
- ASCII in TLDs, domains and usernames clearly increases linkification success. When Punycode (Internationalised Domain Names (IDNs) being expressed in ASCII) is used, the linkification success rate is greater than the corresponding Unicode. See details below.

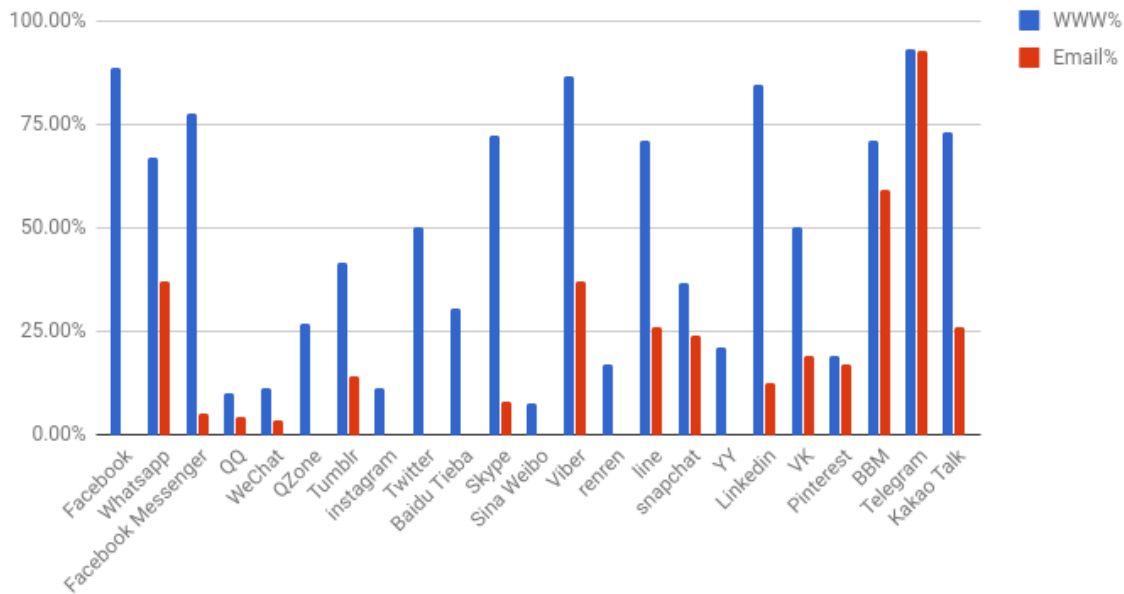
3.2.2 Trends and other observations

All discussion below reviews only aggregate scores/percentages. There will be individual exceptions/outliers to any statement about the aggregate.

Web vs Email:

As measured by percent passed, Web URLs succeed more than email addresses. Factors affecting this are:

- Facebook does not linkify any email addresses at all.
- Some applications linkify some email addresses on certain platforms, but don't linkify any email addresses on other platforms. (Facebook Messenger for Android linkifies five all-ASCII email addresses, but on all other platforms it doesn't linkify any email addresses).
- The majority of applications failed to linkify email addresses with Unicode in the TLD or the username. Unicode in the username is a particularly large factor. Email addresses with Unicode in the username all scored less than 9%. It is mildly interesting that email addresses with Unicode and an ASCII digit in the username scored lower than pure Unicode usernames. That difference is small, however, and it looks like the Safari Tumblr test was the reason for that small improvement.



Only WhatsApp, BBM and Telegram scored above 50% for email addresses. Viber scored above 25% and all other applications scored below 25%.

When we measure linkification success for all platforms, differentiating between web URLs and email addresses, we see:

Success rates for WWW vs Email vs All URLs	
WWW	47.83%
Email	14.95%
All	31.08%

Clearly WWW URLs are better handled than email addresses. This is a measure over all applications however, and the success rates of applications varies very greatly. For instance, for the best five we have:

	Telegram	BBM	Viber	Whatsapp	Kakao Talk
WWW	89.23%	67.31%	82.69%	63.08%	69.23%
Email	92.59%	59.26%	37.04%	37.04%	14.61%
All	90.94%	63.21%	59.43%	49.81%	47.17%

Platform differences:

From looking at the various per-application details on the per-application-per-platform graph, we initially had the impression that the Android success rate might be very much better than that of other platforms.

	Android	iOS	FF	IE	Safari	% diff vs best
WWW	61.29%	47.70%	46.26%	46.26%	49.40%	21.48%
Email	34.09%	26.89%	25.57%	25.57%	27.24%	22.33%
All	35.48%	27.40%	27.01%	27.01%	28.74%	20.99%

Android success rates are on the order of 20% higher than the highest other platform. Percentage difference is calculated as $(high-low)/(avg(high,low))$.

These differences seem significant. The reasons for them will vary from one software developer to another. That the differences exist though indicates a lack of consistency in URL parsing within any given organisation. Some applications do stand out for their consistency: Facebook is perfectly consistent and Telegram is very highly consistent. Other applications are consistent but have much higher error rates (QZone, Instagram, Twitter, Baidu Tieba, Sina Weibo), so their consistency is more in how they go wrong than in how they get things right.

Character set advantages:

For all test strings, a few factors very strongly affect success rate. These factors are, in order of strength (and, also as expected given the historical dominance of ASCII): ASCII in TLDs, ASCII in domain names, Punycode in TLD and domain names. It's likely some parsers are accepting the latter since at the lowest level they present as ASCII. They score less than `ascii.ascii` though, since some applications (or perhaps their libraries) then convert to Unicode and fail to linkify there.

For email addresses, as mentioned above, mixed Unicode and ASCII in usernames is a large factor. All ASCII usernames succeed, whereas mixed Unicode and ASCII have high failure rates.

The section 5 Appendix B – Test Case Success Rates supports this discussion. The last conclusion is based on reviewing the raw results (it is not deducible from the table).

Other interesting things of note:

Tumblr on Android generates a link for `label@example.com` but it is not a `mailto` link. Instead, it acts like a standard web link to `example.com` (clicking on it opens the internal Tumblr browser and shows the `example.com` page).

Renren on Android drops Arabic characters. The test string with `www.[arabic]-[arabic]/[chinesepath]` becomes: `www.-./[chinesepath]` (which is not linked, probably because it doesn't think it is a legal domain.tld).

4 Appendix A - Test Use Cases

The 53 test cases cover UASG004 Verification – Domain Names, UASG004 Verification – Email Addresses, UASG004 Verification – Path Cases, UASG010 Verification – User sends a post that can be linked, UASG010 Verification – User sends a post that should not be linked. Details shown per the following table. There are two variances against UASG004 and UASG010. For the string “example.com” in UASG010, the expected result is updated to linkification. For domain names and path cases in UASG004, add additional prefix ‘www.’ as well-formed test cases.

- UASG004 Verification – Domain Names Linked

- |www.ua-test.link|
- |www.ua-test.technology|
- |www.普遍接受-测试.top|
- |www.ua-test.世界|
- |www.普遍接受-测试.世界|
- |www.普遍接受-测试。世界|
- |www.ua-test.xn--rhqv96g|
- |www.xn---f38am99bqvcd5liy1cxsg.top|
- |www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g|
- |www.القبولالعالمي-اختبار.top|
- |www.اختبار-القبولالعالمي.شبكة|

- UASG004 Verification – Email Addresses Linked

- |Info1@ua-test.link|
- |info2@ua-test.technology|
- |info3@普遍接受-测试.top|
- |info4@ua-test.世界|
- |info5@普遍接受-测试.世界|
- |uasg.tech@डेटामेल.भारत|
- |info5@普遍接受-测试。世界|
- |Info4@ua-test.xn--rhqv96g|
- |Info3@xn---f38am99bqvcd5liy1cxsg.top|
- |Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g|
- |info6@القبولالعالمي-اختبار.top|
- |اختبار-القبولالعالمي.شبكة|
- |user@السعودية.رسيل|
- |测试 1@ua-test.link|
- |测试 2@ua-test.technology|
- |测试 3@普遍接受-测试.top|
- |测试 4@ua-test.世界|
- |测试 5@普遍接受-测试.世界|
- |युएसजी@डेटामेल.भारत|
- |测试 5@普遍接受-测试。世界|
- |测试 4@ua-test.xn--rhqv96g|
- |测试 3@xn---f38am99bqvcd5liy1cxsg.top|
- |测试 5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g|
- |测试 6@القبولالعالمي-اختبار.top|
- |ادون@السعودية.رسيل|
- |مستخدم@السعودية.رسيل|

- UASG004 Verification – Path Cases Linked

- |www.ua-test.link/我的页面|
- |www.ua-test.technology/我的页面|
- |www.普遍接受-测试.top/我的页面|
- |www.ua-test.世界/我的页面|
- |www.普遍接受-测试.世界/我的页面|
- |www.普遍接受-测试。世界/我的页面|

|www.القبولالعالمي.ختبار.top/我的页面|
|www.القبولالعالمي.شبكة.ختبار/我的页面|

- UASG010 Verification – Linked

|http://example.com|
|http://普遍接受-测试.世界|
|www.example.com|
|label@example.com|
|example.com|

- UASG010 Verification – Not Linked

|http:example.com|
|http://example.a|
|http://example..ab|

5 Appendix B – Test Case Success Rates

http://example.com	93.91%	www.اختبار-القبولالعالميشبكة/我的页面	28.70%
www.example.com	84.78%	info6@اختبار-القبولالعالمي.top	27.39%
www.ua-test.link	74.35%	info3@普遍接受-测试.top	26.52%
www.ua-test.technology	63.48%	Info4@ua-test.xn--rhqv96g	26.09%
http://example.a	62.17%	Info5@xn--f38am99bqvcd5liy1cxsg.xn--rhqv96g	26.09%
www.xn--f38am99bqvcd5liy1cxsg.top	62.17%	uasg.tech@डॉटमेल.भारत	25.00%
example.com	60.43%	user@رسيلالسعودية	24.78%
label@example.com	53.48%	اختبار-القبولالعالمي.شبكة	16.52%
http://example.ab	52.17%	info4@ua-test.世界	9.57%
http://普遍接受-测试.世界	51.30%	info5@普遍接受-测试.世界	9.57%
www.ua-test.link/我的页面	50.87%	युएसजी@डॉटमेल.भारत	8.26%
www.ua-test.technology/我的页面	50.87%	دون@رسيل.السعودية	8.26%
Info1@ua-test.link	49.57%	مستخدم@رسيل.السعودية	8.26%
www.ua-test.xn--rhqv96g	47.83%	测试1@ua-test.link	7.39%
www.xn--f38am99bqvcd5liy1cxsg.xn--rhqv96g	47.83%	测试2@ua-test.technology	7.39%
www.اختبار-القبولالعالمي.top	47.39%	测试3@普遍接受-测试.top	7.39%
info2@ua-test.technology	46.96%	测试4@ua-test.世界	7.39%
www.普遍接受-测试.top	46.52%	测试5@普遍接受-测试.世界	7.39%
www.普遍接受-测试.top/我的页面	46.52%	测试4@ua-test.xn--rhqv96g	7.39%
www.اختبار-القبولالعالمي.top/我的页面	44.35%	测试3@xn--f38am99bqvcd5liy1cxsg.top	7.39%
www.ua-test.世界	35.22%	测试5@xn--f38am99bqvcd5liy1cxsg.xn--rhqv96g	7.39%
Info3@xn--f38am99bqvcd5liy1cxsg.top	35.22%	测试6@اختبار-القبولالعالمي.top	7.39%
www.اختبار-القبولالعالميشبكة	31.74%	www.普遍接受-测试.世界	5.22%
www.普遍接受-测试.世界	30.87%	www.普遍接受-测试.世界/我的页面	5.22%
www.ua-test.世界/我的页面	28.70%	http://example.com	4.78%
www.普遍接受-测试.世界/我的页面	28.70%	info5@普遍接受-测试.世界	0.00%
		测试5@普遍接受-测试.世界	0.00%

6 Appendix C - Test Methodology

6.1 Test Scope

The test scope includes the following activities as part of the UASG Linkification testing:

- Social Media Applications: 23 popular social media applications are tested (as defined in 6.1.1 Social Media Applications Scope)
- Test platforms: five platforms covered (as defined in 6.1.2 Test Platform Scope)
- 53 test cases cover both UASG004 and UASG010 (as defined in 6.1.3 Test Case Scope)
- A total of 6095 test cases cover 23 social media applications, 53 test cases and five platforms
- At least two accounts are created in each of the applications
- Each test case is embedded in prefix and suffix with text and blank space

6.1.1 Social Media Applications Scope

The latest version of the following 23 social media applications are within scope:

Social Media Site or App (Language)	Active Users (Millions)
Facebook	1,712
WhatsApp	1,000
Facebook Messenger	1,000
QQ (Chinese)	899
WeChat (Chinese)	806
QZone (Chinese)	652
Tumblr	555
Instagram	500
Twitter	313
Baidu Tieba (Chinese)	300
Skype	300
Sina Weibo (Chinese)	282
Viber	249
Renren (Chinese)	236

Line (Japanese)	218
Snapchat	200
YY	122
LinkedIn	106
Vkontakte (Russian)	100
Pinterest	100
BBM	100
Telegram	100
KakaoTalk (Korean)	49

6.1.2 Test Platform Scope

The 23 social media applications with 6095 test cases were tested on the following mobile platforms and desktop platforms:

- Mobile platforms
 - iPhone 6 – iOS 11.1.2 real device
 - Moto G5S Plus – Android 7.1.1 real device
- Desktop platforms
 - Linux Ubuntu 16.04 – Firefox 57.0.1
 - Windows 10 – IE11
 - macOS High Sierra – Safari 11.0.1

Note that the browser version is the latest version, but the browser type is not specified with platform

Note re Desktop Testing:

Other than the Tumblr application, all desktop platforms returned exactly the same result for each application. It may be practical for future testing to only use one platform from the choice of Linux, Mac and Windows.

6.1.3 Test Case Scope

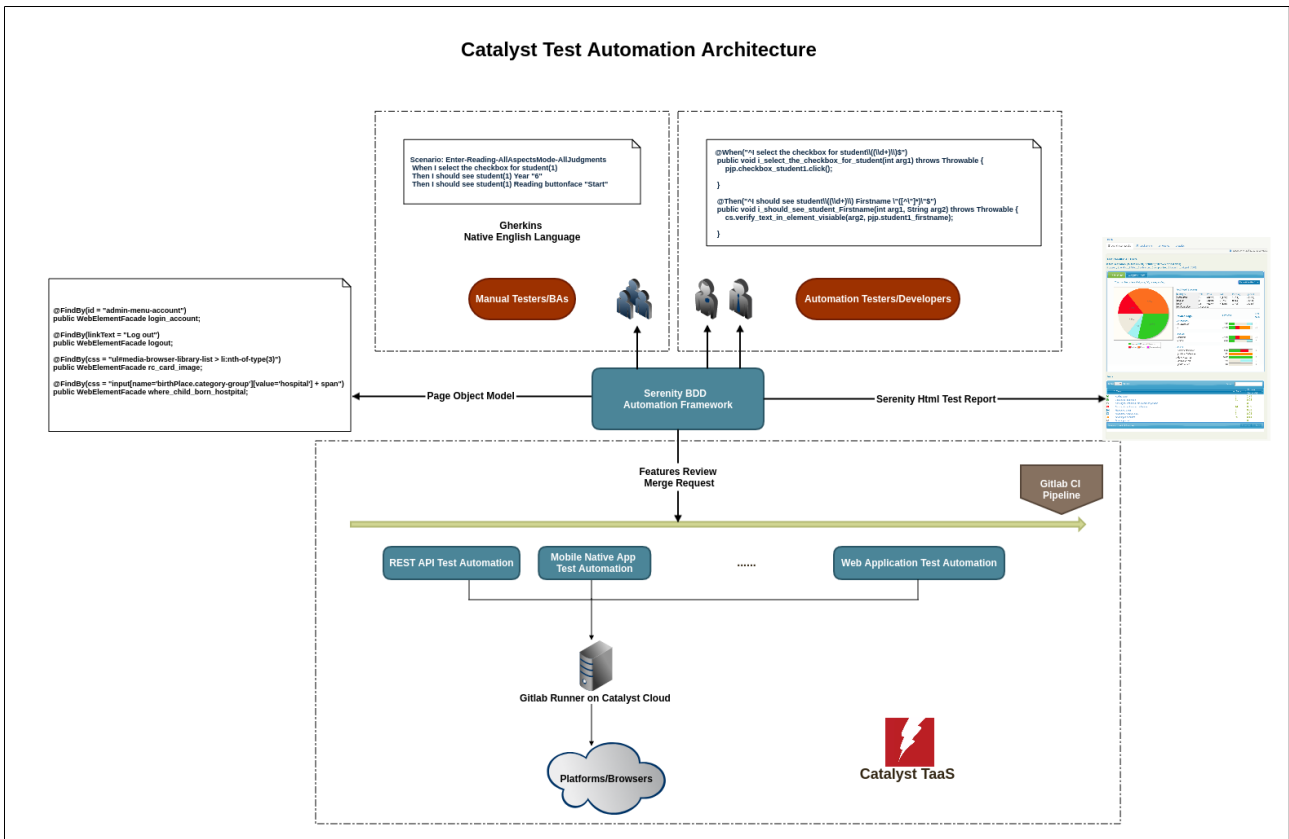
This is defined in 4 Appendix A - Test Use Cases.

6.2 Test Assumptions

- The 23 social media applications were the latest version when these applications were tested. Some of them may have since been upgraded and linkification behaviours updated.
- When run on different browsers and OS versions than those listed, these social media applications may have compatibility issues, and linkification behaviours may be different.
- Broadcast messages are only tested if the application has both broadcast messages and direct messages; otherwise direct messages are tested. For Facebook, test both broadcast messages and direct messages
- Only test comments instead of messaging for the Baidu Tieba and Pinterest applications
- Only test whether the URL (in test data) is a hyperlink or not. Do not test that the URL is clickable or validate whether the URL adds the http:// prefix automatically, translates to Punycode, has a valid domain name etc.
- For the string “example.com” in UASG010, the expected result is updated to linkification.
- For domain names and path cases in UASG004, add additional prefix ‘www.’ as well-formed test cases.
- For the string “ختبار-القبولالعالمي.شبكة” in UASG004, keep this string for testing, even though it looks like it is missing @.

6.3 Test Approach

UASG Linkification testing for 23 social media applications on iOS, Android, Linux, Win and Mac platforms used a combined automation and manual testing approach based on Catalyst’s test automation architecture.



6.3.1 Automation Testing Approach

The automation testing approaches for iOS real device testing, Android real device testing and desktop browser testing are different. Generally, test automation architecture is composed of a Behavior Driven Development (BDD) solution with Page Object Model method + Sauce Labs (Browsers/Platforms stacks) or real devices + Gitlab CI framework + Runner based on a virtual server.

Glossary	Description
macOS High Sierra	Latest Mac operation system
iPhone 6	Real device used for iOS testing environment
Moto G5S Plus	Real device used for Android testing environment
Appium 1.7.1	Open source test automation framework for use with native, hybrid and mobile web apps. It drives iOS, Android, and Windows apps using the WebDriver protocol
Xcode 9	Used to create and test apps for Apple platforms
WebDriverAgent	A https://w3c.github.io/webdriver/webdriver-spec.html implementation for iOS that can be used to remote control iOS devices. It allows you to launch & kill applications, tap & scroll views or confirm presence on a screen.
Serenity BDD	A framework for writing automated tests
Sauce Labs	Cloud-based platform for automated testing of web and mobile applications.

Android SDK	Used to test mobile applications for Google's Android platform
GitLab	Code repository, code review and continuous integration system

Automation Testing on an iOS Real Device

Automation testing was done on an iOS real device using macOS High Sierra as the deployment environment, and an iPhone 6 – iOS 11.1.2 for the real device testing environment. Appium 1.7.1 was used for an Appium server connection and app element inspector. Xcode 9 was used to build and deploy WebDriverAgent to the iPhone 6 testing device. The Serenity BDD framework was used to program automation scripts.

Automation Testing on an Android Real Device

Automation testing was done on an Android real device using a Moto G5S Plus – Android 7.1.1 for the real device testing environment. Appium 1.7.1 was used for an Appium server connection and its UiAutomatorViewer was used for an app element inspector. Android SDK provided an API to develop/test mobile applications for Google's Android platform. The SerenityBDD framework was used to program automation scripts.

Automation Testing on the Website

Automation testing was done on the website using Sauce Labs for real testing environments. The Serenity BDD framework was used to program automation scripts. GitLab CI was used for continuous integration.

Automation Testing Continuous Integration

Automation testing on the website was executed in parallel on GitLab CI for continuous integration. GitLab CI was also used for the automation testing code repository and code reviews.

6.3.2 Manual Testing Approach

Manual testing includes either posting test data or verifying linkification manually.

For posting test data manually, all test data are posted in one message, unless applications have length limitations in the message area. In this case, test data are posted separately.

For verifying linkification manually, all 6095 test cases are verified manually to make sure the test results are correct.

All testing accounts are registered manually.

6.4 Variances to Test

At beginning, automation approaches applied for all the platform testing, including creating test data, executing test cases in continuous integration and generating test reports. Due to application challenges, automation challenges and time limits specified in section 6.6 Challenges, the automation testing approach was updated to a manual testing approach for the remaining testing after discussion with UASG.

In addition, There are two variances against UASG004 and USAG010. For the string “example.com” in UASG010, the expected result is updated to linkification. For domain names and path cases in UASG004, additional prefix ‘www.’ was added to provide for well-formed test cases.

6.5 Threshold Definition

Each application’s average linkification acceptance pass percentage was calculated across all the platforms.

Based on the premise that about 25% of the applications would have reasonable test results, and 10% would have poor results, an overall pass percentage of >45% for a given application was deemed good, while an overall pass percentage of <10% was deemed poor. All other pass rates were deemed average, with assumed scope for improvement. The colours used to illustrate these classifications are **green** for **good / above average**, **yellow** for **average**, and **red** for **poor**.

6.6 Challenges

6.6.1 General

Application testing challenges

Most of these applications have unscheduled updates that are managed automatically. This poses a problem for application stability and performance consistency. This issue was encountered a number of times, where tests that had previously passed now failed, or vice versa.

It took significant time and effort to analyse the applications’ functionalities before testing, especially when the language of the application was not English. There were also a few application bugs that needed time to negotiate and investigate.

Some applications delete test data (Posts or Messages) after a short period of time, such as Baidu Tieba and Snapchat. This required re-entry of data and made automatic testing difficult if there was a performance delay.

There were applications which enforced rate limiting rules. These rules are violated if a user or the automated test sends messages/posts too quickly, which results in the application treating the test data entry as a security violation or SPAM attempt. Under these conditions, these applications needed to be retested or required a re-application of the security verification of the account.

Account registration challenges

Seven social media applications required users to register and verify using Chinese mobile numbers. This led to additional cost and effort to purchase SMS in China and for security code verification. There was frequently a time zone difference difficulty and a few hours or days of delay when verifications needed to be done by an associate residing in China.

Test automation challenges

These popular social media applications are owned by third parties. This brings challenges for automation testing, such as when elements are designed in a customised way, are invisible or are not accessibility friendly. In these cases, automation scripts cannot locate these elements to verify linkification.

There were occasions when locator IDs of elements changed, sometimes even within the same day, when patches or releases of application versions were applied automatically.

In addition, a few applications required manual authentication with real devices using QR code scanning, thumb print scanning or facial recognition. In such cases, full automation testing is impossible, especially in a continuous integration system.

Some situations during testing force a CAPTCHA entry to continue. This is a scenario that cannot be easily managed with automatic testing.

Another scenario that occurred during testing was the random occurrence of pop up advertisements in some applications. This also made test automation difficult, as the pop ups disrupted the planned flow of the automated test and led to false test results being reported.

6.6.2 iOS Platform

The following table details the challenges of the individual applications for mobile iOS testing.

Instagram	Application Challenges: Instagram on iOS only covers UASG010 as all posts cannot be linked.
Twitter	Automation Challenges: Twitter on iOS does not allow user to read post message linked, as the message displays a random number.
Baidu Tieba	Application Challenges: 1. For Baidu Tieba on iOS, there is one defect for Baidu Tieba on posting email: user cannot input @ string. 2. Got feedback from Dennis, who believe users will spend more time posting new comments to existing topics than creating new topics. So verification will only be done for comments on existing topics. Automation Challenges: Baidu Tieba on iOS cannot be verified automatically, as the message element is customised and it doesn't provide sufficient info to check linkification
Skype	Automation Challenges: The type of Skype message on iOS is customised. It does not provide any clues to verify linkification
Sina Weibo	Automation Challenges: Sina on iOS cannot be verified automatically, as the message is set to be invisible.
Viber	Automation Challenges: Viber on iOS is pending for UASG004 – email linkification. Viber does not provide enough information to verify email linkification, and its element is customised. Manual verification is required.
Renren	Automation Challenges: Renren on iOS cannot be verified automatically, as the message element is set to be invisible
Line	Automation Challenges: LINE on iOS is pending for UASG004 – email linkification. LINE does not provide enough information to verify email linkification and its element is customised. Manual verification is required.
Snapchat	Automation Challenges: Snapchat linkification on iOS cannot be verified automatically, as all linked or not linked elements are static text.
YY	Automation Challenges: YY on iOS cannot be verified automatically, as all linked or not linked elements are static text,
LinkedIn	Automation Challenges: LinkedIn on iOS cannot be verified automatically, as all linked or not linked elements are customised.
Vkontakte	Automation Challenges: Vkontakte on iOS cannot be verified automatically as all linked or not linked elements are static text.
Pinterest	Application Challenges: Confirmed with Richard and Dennis that all verifying comments are acceptable.
BBM	Automation Challenges: BBM on iOS cannot be verified automatically, as all linked or not linked elements are static text,
Telegram	Automation Challenges: Telegram on iOS cannot be verified automatically, as the message is set to be invisible
Kakao Talk	Automation Challenges: KakaoTalk on iOS cannot be verified automatically, as the message is set to be invisible

6.6.3 Android Platform

The following table details the challenges of the individual applications for mobile Android testing.

Applications	Android
Facebook	<p>Application Challenges:</p> <ol style="list-style-type: none"> 1. Rate limiting. Posting too fast in the same session and posting many posts over a short period (hundreds over a few days) results in being locked out of posting. There is no feedback on how long the lockout is, so we just waited and retried single posts until one succeeded. 2. When Facebook injects ads or tips or introductions to new features, the structure changes and our locators break. This injection of tips is random though. This is a general issue with fast moving applications. 3. The <code>http://example.ab</code> test failed earlier in the test cycle. It was fixed later in the test cycle though and we could then add it back to the FB test cases.
WhatsApp	
Facebook Messenger	<p>Application Challenges:</p> <p>Rate limiting as above. Structure changes too as above, but less often. Messenger is much more stable.</p>
QQ	
WeChat	<p>Application Challenges:</p> <p>Some paste results and typing results are different</p>
Qzone	
Tumblr	<p>Automation Challenges:</p> <p>Idiosyncratic linkification behavior makes detecting (and classifying) issues more difficult. In Tumblr, <code>www.ua-test.[ch]</code> (where [ch] is two Chinese characters) results in <code>www.ua</code> being linkified and <code>.test.[ch]</code> being not linkified.</p>
Instagram	
Twitter	
Baidu Tieba	<p>Application Challenges:</p> <p>Baidu, Renren, QZone do not show the text we typed with a hint that it's linked (e.g., underlined). Instead they show Chinese text that indicates it's a link. We need to click through to determine where the link goes.</p> <p>Automation Challenges:</p> <p>Baidu sometimes shows ads (that disappear by themselves or sometimes need to be clicked through) on the startup screen. Non-deterministic behavior makes automation much more challenging.</p>
Skype	
Sina Weibo	
Viber	
RenRen	<p>Application Challenges:</p> <p>Renren drops Arabic text in a URL. Thus instead of <code>www.[arabic].top</code> we get <code>www.-.top</code> (where the Arabic had a hyphen in it). One Arabic test URL has an ASCII domain and the other doesn't. The URL with the ASCII domain is linked (but goes to an invalid URL since the URL is <code>www.-.top</code>). The other domain is not linked since it becomes <code>www.-</code>.</p> <p>Automation Challenges:</p> <p>This sort of idiosyncratic linking behavior makes detecting whether a link is correct or not difficult. It should really first be detected by manual entry, identifying idiosyncrasy, and then possibly automating idiosyncrasy.</p>
Line	
Snapchat	
YY	<p>Application Challenges:</p> <p>Similar to the Renren behavior above, "<code>www.ua-test.世界</code>" has the Chinese domain removed. <code>Www.ua-test</code> is then linkified.</p>
LinkedIn	
Vkontakte	
Pinterest	
BBM	<p>Application Challenges:</p> <p>BBM had one case where the typing result was different when typed two different times. This may have had to do with the first attempt being typing of many test cases into one message. But could also be some deep non-deterministic bug.</p>
Telegram	

6.6.4 Desktop Platforms

Linux, Windows and Mac desktop platform testing all entail application and automation challenges: details shown in the table below.

Applications	Desktop
Facebook	<p>Application Challenges: Rate limiting is set for Facebook. This prevents users from posting quickly.</p> <p>Automation Challenges: Cannot do automation testing on Chrome browser as an alert pops up Cannot do automation testing on IE browser as the IDN is input incorrectly (IE and automation framework compatibility issue) Cannot do automation testing on Safari browser as the cursor is not displayed in the post textarea (Safari and automation framework compatibility issue)</p>
WhatsApp	<p>Application Challenges: The application allows only 250 chars for each message. Testers need to split the test cases into multiple messages in manual tests.</p> <p>Automation Challenges: Safari WebDriver cannot handle an element with the tag "contenteditable"="true". Therefore, the script needs to be run on Chrome browser on Mac system in Sauce Labs. The application requires login using a phone. Sauce Labs is not available for scanning using phone. The test should be done manually.</p>
Facebook Messenger	
QQ	QQ does not support a website version
WeChat	<p>Application Challenges: Newly registered customers cannot access the WeChat application in browsers. Therefore, testing WeChat in browsers was not done.</p>
Qzone	<p>Application Challenges: Chinese language is a challenge. It takes a long time to find a way to post messages.</p> <p>Automation Challenges: Requires a CAPTCHA to log in, therefore cannot build automatic test in Sauce Labs. The application does not store information in cookies. The tester needs to enter a CAPTCHA to log in for each test case. Therefore, no automatic testing is implemented.</p>
Tumblr	<p>Application Challenges: Tumblr translates three short dashes to a single long dash (but still gives the correct link). Therefore, testers need to verify each link to make sure that the target links are correct.</p>
Instagram	<p>Application Challenges: Instagram allows users to post only around 10 messages at a time. After that, the application returns 403 Forbidden error. Tester needs to wait until the next day to run the test again. Therefore, we cannot go through the whole test in one run.</p> <p>Automation Challenges: Moreover, Sauce Labs only shows half of the page in Windows/IE and the test script cannot select elements hidden below. Therefore, all tests fail in Windows/IE using Sauce Labs.</p>
Twitter	<p>Automation Challenges: Safari WebDriver cannot handle an element with the tag "contenteditable"="true". Therefore, the script needs to be run on Chrome in Sauce Labs. We then run the test manually with native Safari/Mac.</p> <p>Application Challenges: In addition, the application allows only 250 characters for each message. Testers need to split the test cases into multiple messages in manual tests.</p>
Baidu Tieba	<p>Automation Challenges: To post a message, users need to open two continuous tabs. The automatic test script needs to navigate the clicks through these tabs. In addition, the application allows the user to log in for the first time, then it requires a CAPTCHA for the next login. Therefore, we could not test the application automatically. (The login information is not stored in cookies, so storing cookies in a file does not help.)</p>

Applications	Desktop
Skype	Automation Challenges: The app was changed following the first time. The test script ran successfully once, then it failed when it was run again as there was a new pop up. We then needed to update the test script to “accept” this new pop up.
Sina Weibo	Automation Challenges: This application requires the user to scan a QR code using a phone. Therefore, no automated test was implemented. Application Challenges: The application automatically converts some URLs to Chinese language links. These Chinese language links can be seen as domain mapping stored in a database server. Therefore the test script needs to verify whether the redirect link is correct or not. For example, “ http://example.com ” is converted to “O网页链接” link. When running the test, the database server was down and tests failed. The tester had to wait till the next day to run the test again.
Viber	Application Challenges: A Chinese language website. Very hard to find a way to post a message. Automation Challenges: Safari WebDriver cannot handle “contenteditable” elements. Therefore, the testing script was run on Chrome for automated testing The application is too slow or completely unresponsive. Sauce Labs throws errors if there is no response within 90 seconds. Therefore, most of the test cases were errors as the testing script threw “element not found”
RenRen	Application Challenges: A Chinese language website. Very hard to find a way to post a message. Automation Challenges: Safari WebDriver cannot handle “contenteditable” elements. Therefore, the testing script was run on Chrome for automated testing The app is too slow or completely unresponsive. Sauce Labs throws errors if there is no response within 90 seconds. Therefore, most of test cases were errors as the testing script throws “element not found”
Line	Desktop application only, not browser-based
Snapchat	Mobile version only
YY	Cannot post message with URL or email address for this application
LinkedIn	Automation Challenges: The testing script works correctly for Linux/Chrome. However, the script does not work correctly in IE/Safari (seems to be invalid locator issue). Therefore, the automatic test script was implemented in Chrome for both Mac and Windows. As we later re-ran the test manually, native Safari (Mac) and IE (Windows) were tested.
Vkontakte	Automation Challenges: Safari WebDriver cannot handle “contenteditable” elements. Therefore, we could not test automatically in Safari/Mac. (We ran manual tests later on.)
Pinterest	Application Challenges: Confirmed by customers that verifying linkification on comments only was acceptable. Some prerequisites before posting messages – create a new board, add pins and upload pictures then post comments. Therefore, the testing script required a numbers of steps for posting messages.
BBM	Mobile version only
Telegram	Automation Challenges: It seems that there is a bug in the application for Windows/IE/Edge when typing specific Chinese character messages, as these messages are missing (cannot be seen after typing the message) from the message panel. However, those test messages could be seen in Linux/FF or Mac/Safari. Safari WebDriver cannot handle “contenteditable” elements. Therefore, we could not test automatically in Safari/Mac.

6.7 Future Test Considerations

Automated test difficulties

Catalyst approached the project with the intention of using the Catalyst Automated Test suite to totally manage the tests in an automated fashion. However, after a very concerted effort, and with about 45% automated test coverage, the Catalyst team soon came to the conclusion with agreement of the UASG project sponsor that the most efficient approach was to complete the tests by manually testing the remaining scenarios.

Some of the main challenges to automating the tests fully included:

- the element Locator Id moving, changing its name, being invisible or is not being accessibility friendly;
- some instability of application behaviour is introduced after unscheduled updates were applied automatically;
- some applications apply rate limits to the frequency and speed of posts and message submission, assuming that the rapid rate and/or multiple submissions were not from a human, and that the application was being compromised from a security and SPAM perspective;
- manual authentication is enforced by some applications, which required QR code scanning, thumb print scanning or face recognition; and
- CAPTCHA entry screens or random advertising and tips sometimes popped up, which disrupts the programmed sequence for the automated test, ultimately giving false results.

Repeating the tests again with the automated test suite will reintroduce these issues again and the effort to gain efficiencies in the test will be lost. These challenges are described in detail in section 6.6 Challenges above.

Input:

Automated data entry is very strongly dependent on the user interface being relatively stable. Some changes can be worked around. For instance, if the element we need to type into still exists on the page and can be referred to by a logical name (not fixed index) we can still type into it. However, if the elements we need cannot be referred to by a logical name, or the startup screen actually changes (e.g., Sina Weibo, Baidu Tieba and perhaps some other applications) randomly show an ad when starting up and the element we need to type into does not exist, then any automated code needs to be more flexible. For Android, a mix of shell scripts that run ADB (Android Debug Bridge) commands plus manual intervention can partly automate (i.e., speed up) data entry, but with the flexibility of having a human start up applications, get through any intervening screens and click on the text box into which to type. The script can then do the rest.

While automated data entry is available for iOS and many (but not all) of the web application platforms, it is probably most economical that future test entry should be performed manually. Most manual entry is easily performed by pasting all the test cases in as one message. This works for the majority of applications. For

those for which it doesn't work, we need to adjust by performing one or another of the following workarounds:

- Paste in multiple smaller blocks where the application has a maximum message length that's shorter than the full test text.
- Type in individual strings manually or via tools such as Selenium or ADB. If this is not practical, paste in smaller bits of tests. Some applications have different behaviour when typing more than one link versus just one link.

Applications that require these workarounds in one test cycle may not require them in future test cycles as the applications change.

Verification:

For most applications, verifying whether some text is linkified is relatively simple. There are clear visual hints that they're linkified. It is less clear whether the link is CORRECT, however. For instance, <http://example.com> often has the example.com bit linkified. A naive definition of linkification (if there's a link it's linkified) would make the wrong judgement in this case. The whole text is not linkified, it's just following the rule where a bare domain (e.g., "example.com") is linkified.

Other applications have more complex behaviour. Twitter, for instance, will replace long URLs with a t.co URL shortened equivalent. For applications like this, we actually need to click through to see whether we arrive at the target destination. And for this and similar cases, it's impossible to distinguish between <http://example.com> and example.com.

Some tests (usually by browser), particularly path tests with Chinese characters in the path, when clicked, go to the correct server (domain Unicode or Punycode if correct) but we get a 404. For those cases, we do not know whether the URL really exists and the browser just mis-encoded the path part of the URL, or whether the application correctly linkified the text but the path doesn't exist on the web server. Test cases should be improved so that path cases actually exist on the servers.



Reporting:

The current per-application spreadsheets do not have details about why tests failed. For instance, one Android application failed 'www.ua-test.technology' because only 'www.ua-test.tech' was linkified (the 'ology' rest of the link was not linkified). Similarly, YY failed www.ua-test.link (and other URLs that started with www.ua-test). It seems to have thought .ua-test was the domain and it linkified www.ua-test (the .link bit was not part of the URL).

To be sure, the specific errors can be easily replicated/determined by the application developers. The detailed notes would be helpful, however, if they are not able to replicate (bug has been fixed or performs differently on a different version of the platform) and ask for more detail about the failure.

Test Data:

The UASG004 test case "اختبار-القبولالعالمي،شبكة" is missing a username and @ character. A better email address should be provided for future testing (or we can prefix, e.g., user@ to the domain).

Desktop Testing:

Other than the Tumblr application, all desktop platforms returned exactly the same result for each application. It may be practical for future testing to only use one platform from the choice of Linux, Mac and Windows.

7 Appendix D - Specific Results

For the results tables we are recording two pieces of information, test case pass or fail (green or red colour), and if the test case was linked or not linked (Y or N). Grey is used to colour results cells to indicate that the application is not supported in that platform.

7.1 Baidu Tieba

7.1.1 Baidu Tieba Testing Notes

Baidu Tieba is an Chinese social media platform with over 300 Million active users.

7.1.2 Baidu Tieba Results Observations

Baidu Tieba Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Usag004 Verification - Domain Names	45%	45%	45%	45%	45%
Uasg004 Verification - Email Addresses	0%	0%	0%	0%	0%
Uasg004 Verification - Path Cases	0%	0%	0%	0%	0%
Uasg010 Verification - User sends a post that can be linked	40%	40%	40%	40%	40%
Uasg010 Verification - User sends a post that should not be linked	33%	33%	33%	33%	33%
Overall Results	15%	15%	15%	15%	15%

UASG004 Verification - Domain Names

- Baidu Tieba only linked the ASCII based domain test cases (1, 2, 7, 8, 9) across all platforms.

UASG004 Verification - Email Addresses

- Baidu Tieba currently doesn't support linkifying email addresses at all, so all platforms failed all tests.

UASG004 Verification - Path Cases

- No Path test cases were linked across any platforms.

UASG010 Verification - User sends a post that can be linked

- Across all platforms, only two of the test cases were linked (46, 48).

UASG010 Verification - User sends a post that should not be linked

- All platforms correctly did not link one test case (51) but did link the other two (52, 53).

Baidu Tieba Results conclusions

- Baidu Tieba is one of the few platforms that had perfectly consistent results over all platforms tested. Unfortunately, its lack of support for linking email addresses and non-ASCII characters brought its results down to a relatively low pass rate of 15% overall.

7.1.3 Baidu Tieba Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
10	www.اختبار-القبولاعلالي.شبكة	N	N	N	N	N
11	www.اختبار-القبولاعلالي.شبكة	N	N	N	N	N
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डॉटमेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-القبولاعلالي.شبكة	N	N	N	N	N
23	اختبار-القبولاعلالي.شبكة	N	N	N	N	N
24	user@رسائلالسعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युएएसजी@डॉटमेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-القبولاعلالي.شبكة	N	N	N	N	N
36	دون@رسائلالسعودية	N	N	N	N	N
37	مستخدم@رسائلالسعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-القبولاعلالي.شبكة/我的页面	N	N	N	N	N
45	www.اختبار-القبولاعلالي.شبكة/我的页面	N	N	N	N	N
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	N	N	N	N
50	example.com	N	N	N	N	N
Uasg010 Verification - User sends a post that should not be linked						
51	http:example.com	N	N	N	N	N
52	http://example.a	Y	Y	Y	Y	Y
53	http://example..ab	Y	Y	Y	Y	Y
Baidu Tieba Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		45%	45%	45%	45%	45%
Email Addresses		0%	0%	0%	0%	0%
Path Cases		0%	0%	0%	0%	0%
User sends a post that can be linked		40%	40%	40%	40%	40%
User sends a post that should not be linked		33%	33%	33%	33%	33%
Overall Results		15%	15%	15%	15%	15%
Table Key						
	Test Pass	Y		Test Fail	N	
	Test Linked	Y		Not Linked	N	

7.2 BBM

7.2.1 BBM Testing Notes

BlackBerry Messenger (BBM) is an instant messaging and videotelephony application with over 100 Million users. While initially only available on BlackBerry devices, it has expanded to Android and iOS.

7.2.2 BBM Results Observations

BBM Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%			
Email Addresses	92%	23%			
Path Cases	88%	50%			
User sends a post that can be linked	100%	100%			
User sends a post that should not be linked	33%	33%			
Overall Results	89%	38%			

UASG004 Verification – Domain Names

- The Android application was able to link all but the Chinese ‘open dot’ test case (6), while the iOS application was also unable to link the non-ASCII top levels domains or Punycode test cases (4-9, 11).

UASG004 Verification – Email Addresses

- Like the Domain Name test cases, the Android application was able to link all but the Chinese ‘open dot’ test cases (18, 31), while the iOS application was only able to link a subset of the ASCII top level domains (12-14, 22) plus the mixed ASCII/Hindi and ASCII/Arabic test cases (17, 24).

UASG004 Verification – Path Cases

- As before, the Android application can parse and link all but the Chinese ‘open dot’ test case, while the iOS application also failed the non-ASCII top level domains (41, 42, 45).

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases.

UASG010 Verification – User sends a post that should not be linked

- The Android and iOS applications both correctly did not link the first test case (51) but incorrectly linked the final two (52, 53).

BBM Results conclusions

- BBM’s platform results are one of the most divergent of the entire test suite. The iOS application pass rate of 38% is a very middling to low result and is greatly hurt by a reduced ability to link non-ASCII test cases. On the other hand, the Android application’s 89% is one of the best results of the test, putting it in the top tier of Universal Acceptance platforms.

7.2.3 BBM Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y			
2	www.ua-test.technology	Y	Y			
3	www.普遍接受-测试.top	Y	Y			
4	www.ua-test.世界	Y	N			
5	www.普遍接受-测试.世界	Y	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	Y	N			
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	N			
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
10	www.اختبار-لاقبولا على .top	Y	Y			
11	www.اختبار-لاقبولا على شبكة	Y	N			
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	Y			
13	info2@ua-test.technology	Y	Y			
14	info3@普遍接受-测试.top	Y	Y			
15	info4@ua-test.世界	Y	N			
16	info5@普遍接受-测试.世界	Y	N			
17	uasg.tech@डॉटमेल.भारत	Y	Y			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	Y	N			
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	Y	N			
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
22	info6@اختبار-لاقبولا على .top	Y	Y			
23	اختبار-القبولالعالمي.شبكة	Y	N			
24	user@رسائلالسعودية	Y	Y			
25	测试1@ua-test.link	Y	N			
26	测试2@ua-test.technology	Y	N			
27	测试3@普遍接受-测试.top	Y	N			
28	测试4@ua-test.世界	Y	N			
29	测试5@普遍接受-测试.世界	Y	N			
30	यूएसजी@डॉटमेल.भारत	Y	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	Y	N			
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	Y	N			
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
35	测试6@اختبار-لاقبولا على .top	Y	N			
36	دون@رسيل.السعودية	Y	N			
37	مستخدم@رسيل.السعودية	Y	N			
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	Y			
39	www.ua-test.technology/我的页面	Y	Y			
40	www.普遍接受-测试.top/我的页面	Y	Y			
41	www.ua-test.世界/我的页面	Y	N			
42	www.普遍接受-测试.世界/我的页面	Y	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولا على .top/我的页面	Y	Y			
45	www.اختبار-لاقبولا على شبكة/我的页面	Y	N			
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	Y	Y			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N			
52	http://example.a	Y	Y			
53	http://example..ab	Y	Y			
BBM Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	36%			
Email Addresses		92%	23%			
Path Cases		88%	50%			
User sends a post that can be linked		100%	100%			
User sends a post that should not be linked		33%	33%			
Overall Results		89%	38%			
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N
		Y	N	Y	N	

7.3 Facebook

NB: We tested Facebook and Facebook messenger as separate applications.

7.3.1 Facebook Testing Notes

Facebook is a US based social media platform with over 2 Billion active users.

7.3.2 Facebook Results Observations

Facebook Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	91%	91%	91%	91%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	88%	88%	88%	88%	88%
User sends a post that can be linked	80%	80%	80%	80%	80%
User sends a post that should not be linked	67%	67%	67%	67%	67%
Overall Results	43%	43%	43%	43%	43%

UASG004 Verification – Domain Names

- All platforms performed very well here, only failing on the Chinese ‘open dot’ character (6).

UASG004 Verification – Email Addresses

- Facebook currently doesn’t support linkifying email addresses at all, so all platforms failed all tests.

UASG004 Verification – Path Cases

- As with the Domain Names cases, very consistent results across all platforms, and again only failing on Chinese ‘open dot’ character (43).

UASG010 Verification – User sends a post that can be linked

- High scoring consistent results again across all platforms, only failing due to the lack of email linking support (49).

UASG010 Verification – User sends a post that should not be linked

- As above, consistent results across all platforms, passing two out of three tests, only failing on one (52).

Facebook Results conclusions

- Perhaps not surprisingly, Facebook offers possibly the most consistent set of results over all applications tested. If not for its lack of email support, Facebook could have had one of the best sets of results overall.

7.3.3 Facebook Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	Y	Y	Y	Y	Y
4	www.ua-test.世界	Y	Y	Y	Y	Y
5	www.普遍接受-测试.世界	Y	Y	Y	Y	Y
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
10	www.اختبار-للاقبولا علماي.top	Y	Y	Y	Y	Y
11	www.اختبار-للاقبولا علماي شبكة	Y	Y	Y	Y	Y
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-للاقبولا علماي.top	N	N	N	N	N
23	اختبار-للاقبولا العالممي.شبكة	N	N	N	N	N
24	user@رسيلالسعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युरअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-للاقبولا علماي.top	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	N
37	مستخدم@رسيل.السعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	Y	Y	Y	Y
39	www.ua-test.technology/我的页面	Y	Y	Y	Y	Y
40	www.普遍接受-测试.top/我的页面	Y	Y	Y	Y	Y
41	www.ua-test.世界/我的页面	Y	Y	Y	Y	Y
42	www.普遍接受-测试.世界/我的页面	Y	Y	Y	Y	Y
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-للاقبولا علماي.top/我的页面	Y	Y	Y	Y	Y
45	www.اختبار-للاقبولا علماي شبكة/我的页面	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	Y	Y	Y
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	N	N	N	N
50	example.com	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that should not be linked						
51	http:example.com	N	N	N	N	N
52	http://example.a	Y	Y	Y	Y	Y
53	http://example..ab	N	N	N	N	N

Facebook Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	91%	91%	91%	91%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	88%	88%	88%	88%	88%
User sends a post that can be linked	80%	80%	80%	80%	80%
User sends a post that should not be linked	67%	67%	67%	67%	67%

Overall Results	43%	43%	43%	43%	43%
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Table Key	Test Pass	Test Fail
Test Linked	Y	Not Linked

7.4 Facebook Messenger

NB: We tested Facebook Messenger and Facebook as separate applications.

7.4.1 Facebook Messenger Testing Notes

Facebook Messenger is a US based instant messaging service developed as an offshoot of Facebook with over 1.2 Billion active users.

7.4.2 Facebook Messenger Results Observations

Facebook Messenger Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	91%	91%	91%
Email Addresses	23%	0%	0%	0%	0%
Path Cases	88%	50%	88%	88%	88%
User sends a post that can be linked	100%	80%	60%	60%	60%
User sends a post that should not be linked	100%	33%	33%	33%	33%
Overall Results	58%	25%	40%	40%	40%

UASG004 Verification – Domain Names

- Android, Firefox, Safari, and IE all performed very well here, only failing on the Chinese ‘open dot’ character (6). The iOS application failed on the non-ASCII top level domain (4, 5, 6, 7, 9, 11) and Punycode (8) test cases.

UASG004 Verification – Email Addresses

- The Android application was the only platform to link any email addresses, and even then only six of the 26 test cases. All four other platforms failed all test cases.

UASG004 Verification – Path Cases

- As with the Domain Names cases, Android, Firefox, Safari, and Internet Explorer only failed on Chinese ‘open dot’ character (43) while the iOS application also failed on the non-ASCII top level domains.

UASG010 Verification – User sends a post that can be linked

- The Android application passed all tests. The iOS application failed only slightly worse failing to link the email address test (49) while all three desktop platforms failed to link the email address and the short URL url (50).

UASG010 Verification – User sends a post that should not be linked

- As above the Android application passed all three test not linked test cases, while the other four platforms all failed the same final two (52, 53).

Facebook Messenger Results conclusions

- Facebook Messenger had very different results from Facebook across the tested platforms. Android was the clear best performer, but still only passed 58% of test cases. The three desktop platforms all

mirrored each other with 40%, while the iOS application's struggle with non-ASCII domains put it back to 25%.

7.4.3 Facebook Messenger Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Usg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	Y	Y	Y	Y	Y
4	www.ua-test.世界	Y	N	Y	Y	Y
5	www.普遍接受-测试.世界	Y	N	Y	Y	Y
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	N	Y	Y	Y
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	N	Y	Y	Y
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	Y	Y	Y
10	www.اختبار-للقبولاعلالي.توپ	Y	Y	Y	Y	Y
11	www.اختبار-للقبولاعلالي.شبكة	Y	N	Y	Y	Y
<i>Usg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	Y	N	N	N	N
13	info2@ua-test.technology	Y	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	Y	N	N	N	N
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	Y	N	N	N	N
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	N	N	N
22	info6@اختبار-للقبولاعلالي.توپ	N	N	N	N	N
23	اختبار-للقبولاعلالي.شبكة	Y	N	N	N	N
24	user@رسائلالسعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	सुरअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-للقبولاعلالي.توپ	N	N	N	N	N
36	دون@رسائلالسعودية	N	N	N	N	N
37	مستخدم@رسائلالسعودية	N	N	N	N	N
<i>Usg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y	Y	Y	Y
39	www.ua-test.technology/我的页面	Y	Y	Y	Y	Y
40	www.普遍接受-测试.top/我的页面	Y	Y	Y	Y	Y
41	www.ua-test.世界/我的页面	Y	N	Y	Y	Y
42	www.普遍接受-测试.世界/我的页面	Y	N	Y	Y	Y
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-للقبولاعلالي.توپ/我的页面	Y	Y	Y	Y	Y
45	www.اختبار-للقبولاعلالي.شبكة/我的页面	Y	N	Y	Y	Y
<i>Usg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	Y	Y	Y
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	Y	N	N	N	N
50	example.com	Y	Y	N	N	N
<i>Usg010 Verification - User sends a post that should not be linked</i>						
51	http:example.com	N	N	N	N	N
52	http://example.a	N	Y	Y	Y	Y
53	http://example.ab	N	Y	Y	Y	Y

Facebook Messenger Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	91%	91%	91%
Email Addresses	23%	0%	0%	0%	0%
Path Cases	88%	50%	88%	88%	88%
User sends a post that can be linked	100%	80%	60%	60%	60%
User sends a post that should not be linked	100%	33%	33%	33%	33%

Overall Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
	58%	25%	40%	40%	40%

Table Key	Test Pass	Test Fail
	Y	Not Linked
		N

7.5 Instagram

7.5.1 Instagram Testing Notes

Instagram is a photo sharing application and service owned by Facebook with over 800 million active users.

7.5.2 Instagram Results Observations

Instagram Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Usag004 Verification - Domain Names	0%	0%	0%	0%	0%
Uasg004 Verification - Email Addresses	0%	0%	0%	0%	0%
Uasg004 Verification - Path Cases	0%	0%	0%	0%	0%
Uasg010 Verification - User sends a post that can be linked	0%	0%	0%	0%	0%
Uasg010 Verification - User sends a post that should not be linked	100%	100%	100%	100%	100%
Overall Results	6%	6%	6%	6%	6%

UASG004 Verification - Domain Names

- Instagram did not link any Domain Name test cases on any platform.

UASG004 Verification - Email Addresses

- Instagram did not link any Email Address test cases on any platform.

UASG004 Verification - Path Cases

- Instagram did not link any Path test cases on any platform.

UASG010 Verification - User sends a post that can be linked

- Instagram did not link any test cases on any platform.

UASG010 Verification - User sends a post that should not be linked

- Instagram passed all test cases as it did not link any test cases on any platform.

Instagram Results conclusions

- Instagram is an unusual platform in that it doesn't link anything, and as a result it has one of the lowest success rates of the project at 6%.

7.5.3 Instagram Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	N	N	N	N	N
2	www.ua-test.technology	N	N	N	N	N
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	N	N	N	N	N
8	www.xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
10	www.اختبار-لاقبولا عمالي.top	N	N	N	N	N
11	www.اختبار-لاقبولا عمالي شبكة	N	N	N	N	N
<i>Uasg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-لاقبولا عمالي.top	N	N	N	N	N
23	اختبار-لاقبولا عمالي شبكة	N	N	N	N	N
24	user@رسائل السعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युटअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولا عمالي.top	N	N	N	N	N
36	دون@رسائل السعودية	N	N	N	N	N
37	مستخدم@رسائل السعودية	N	N	N	N	N
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا عمالي.top/我的页面	N	N	N	N	N
45	www.اختبار-لاقبولا عمالي شبكة/我的页面	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	N	N	N	N	N
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	N	N	N	N	N
49	label@example.com	N	N	N	N	N
50	example.com	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http:example.com	N	N	N	N	N
52	http://example.a	N	N	N	N	N
53	http://example..ab	N	N	N	N	N
Instagram Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		0%	0%	0%	0%	0%
Email Addresses		0%	0%	0%	0%	0%
Path Cases		0%	0%	0%	0%	0%
User sends a post that can be linked		0%	0%	0%	0%	0%
User sends a post that should not be linked		100%	100%	100%	100%	100%
Overall Results		6%	6%	6%	6%	6%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.6 KakaoTalk

7.6.1 KakaoTalk Testing Notes

KakaoTalk is a Korea based instant messaging service for smart phones with 49 Million active users.

7.6.2 KakaoTalk Results Observations

KakaoTalk Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	82%	36%			
Email Addresses	23%	24%			
Path Cases	88%	50%			
User sends a post that can be linked	100%	100%			
User sends a post that should not be linked	100%	33%			
Overall Results	57%	38%			

UASG004 Verification – Domain Names

- The Android application linked most test cases, missing only the Chinese ‘open dot’ test case (6) and the final Punycode test case (9). The iOS application also missed those, as well as the rest of the non-ASCII top level domain cases (4-9,11).

UASG004 Verification – Email Addresses

- The Android application successfully linked the full ASCII test cases, while the iOS application was able to parse the ASCII top level domain email address, as well as the ASCII recipient Hindi/Arabic domain test cases (21, 28).

UASG004 Verification – Path Cases

- Both applications failed to link the Chinese ‘open dot’ test case (43), and the iOS application also failed all the Chinese and Arabic top level domain test cases (42-, 43, 45)

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases.

UASG010 Verification – User sends a post that should not be linked

- The Android application correctly did not link any test cases. The iOS application correctly did not link the first test case (51) but incorrectly linked the final two (52, 53).

KakaoTalk Results conclusions

- KakaoTalk’s results are split by platform. The Android application’s results of 57% would put it slightly above average for this test overall, while the iOS application’s results of 38% drag the platform back to being only middle of the pack for these test results.

7.6.3 KakaoTalk Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y			
2	www.ua-test.technology	Y	Y			
3	www.普遍接受-测试.top	Y	Y			
4	www.ua-test.世界	Y	N			
5	www.普遍接受-测试.世界	Y	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	Y	N			
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	N			
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
10	www.اختبار-لاقبولا.عالمي.top	Y	Y			
11	www.اختبار-لاقبولا.عالمي.شبكة	Y	N			
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	Y			
13	info2@ua-test.technology	Y	Y			
14	info3@普遍接受-测试.top	N	Y			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	N			
17	uasg.tech@डेटामेल.भारत	N	Y			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	Y	N			
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	N			
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
22	info6@اختبار-لاقبولا.عالمي.top	N	Y			
23	اختبار-لاقبولا.عالمي.شبكة	Y	N			
24	user@رسيل.السعودية	N	Y			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	युएसजी@डेटामेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@اختبار-لاقبولا.عالمي.top	N	N			
36	دون@رسيل.السعودية	N	N			
37	مستخدم@رسيل.السعودية	N	N			
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	Y			
39	www.ua-test.technology/我的页面	Y	Y			
40	www.普遍接受-测试.top/我的页面	Y	Y			
41	www.ua-test.世界/我的页面	Y	N			
42	www.普遍接受-测试.世界/我的页面	Y	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولا.عالمي.top/我的页面	Y	Y			
45	www.اختبار-لاقبولا.عالمي.شبكة/我的页面	Y	N			
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	Y	Y			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
Uasg010 Verification - Usersends a post that should not be linked						
51	http:example.com	N	N			
52	http://example.a	N	Y			
53	http://example..ab	N	Y			
Kakao Talk Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		82%	36%			
Email Addresses		23%	23%			
Path Cases		88%	50%			
User sends a post that can be linked		100%	100%			
User sends a post that should not be linked		100%	33%			
Overall Results		57%	38%			
Table Key		Test Pass	Test Fail			
		Test Linked	Not Linked		N	

7.7 Line

7.7.1 Line Testing Notes

Line is a Japan based instant messaging and voice over IP service with over 215 Million active users. Line requires the use of a desktop application to use under Linux, Mac, and Windows, so those platforms were deemed out of scope at this time.

7.7.2 Line Results Observations

Line Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%			
Email Addresses	23%	23%			
Path Cases	88%	50%			
User sends a post that can be linked	100%	100%			
User sends a post that should not be linked	33%	33%			
Overall Results	55%	38%			

UASG004 Verification – Domain Names

- The Android application successfully linked all test cases except for the Chinese ‘open dot’ test case (6). The iOS application only successfully linked the four ASCII top level domain/non Punycode test cases (1, 2, 3, 10).

UASG004 Verification – Email Addresses

- The Android application successfully linked all the entirely ASCII email test cases. The iOS application successfully linked the ASCII recipient/ASCII top level domain test cases (1, 2, 3, 22) as well as the ASCII recipient/Hindi and Arabic domain test cases (17, 24).

UASG004 Verification – Path Cases

- The Android application successfully linked all but the Chinese ‘open dot’ test case (43), while the iOS application was also unable to link the non-ASCII top level domain test cases (41, 42, 45).

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases.

UASG010 Verification – User sends a post that should not be linked

- Both platforms correctly did not link the first test case (51), however both applications incorrectly linked the final two test cases (52, 53).

Line Results conclusions

- Line’s results are very split by platform. While the Android application’s 55% success rate puts it slightly above average, the iOS application’s inability to link the non-ASCII domains brought it back to

a poorer 38%. Both platforms struggled equally with the Chinese 'open dot' test cases, and non-ASCII email recipients.

7.7.3 Line Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y			
2	www.ua-test.technology	Y	Y			
3	www.普遍接受-测试.top	Y	Y			
4	www.ua-test.世界	Y	N			
5	www.普遍接受-测试.世界	Y	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	Y	N			
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	N			
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
10	www.اختبار-لاقبولا علاجي.top	Y	Y			
11	www.اختبار-لاقبولا علاجي شبكة	Y	N			
<i>Uasg004 Verification - Email Addresses</i>						
12	info1@ua-test.link	Y	Y			
13	info2@ua-test.technology	Y	Y			
14	info3@普遍接受-测试.top	N	Y			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	Y			
17	uasg.tech@डेटामेल.भारत	N	Y			
18	info5@普遍接受-测试.世界	N	N			
19	info4@ua-test.xn--rhqv96g	Y	N			
20	info3@xn---f38am99bqvcd5liy1cxsg.top	Y	N			
21	info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
22	info6@اختبار-لاقبولا علاجي.top	N	Y			
23	اختبار-القبولالعالمي.شبكة	Y	N			
24	user@رسائلالسعودية	N	Y			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	सुरअसजी@डेटामेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@ختبار-لاقبولا علاجي.top	N	N			
36	دون@رسيل.السعودية	N	N			
37	مستخدم@رسيل.السعودية	N	N			
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y			
39	www.ua-test.technology/我的页面	Y	Y			
40	www.普遍接受-测试.top/我的页面	Y	Y			
41	www.ua-test.世界/我的页面	Y	N			
42	www.普遍接受-测试.世界/我的页面	Y	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولا علاجي.top/我的页面	Y	Y			
45	www.اختبار-لاقبولا علاجي شبكة/我的页面	Y	N			
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	Y	Y			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N			
52	http://example.a	Y	Y			
53	http://example.ab	Y	Y			
Line Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	36%			
Email Addresses		23%	23%			
Path Cases		88%	50%			
User sends a post that can be linked		100%	100%			
User sends a post that should not be linked		33%	33%			
Overall Results		55%	38%			
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N
		Y	N	Y	N	

7.8 LinkedIn

7.8.1 LinkedIn Testing Notes

LinkedIn is a US based business and employment-oriented social networking website owned by Microsoft with over 106 Million active users.

7.8.2 LinkedIn Results Observations

LinkedIn Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	100%	100%	100%
Email Addresses	4%	23%	8%	8%	8%
Path Cases	88%	50%	100%	100%	100%
User sends a post that can be linked	80%	100%	100%	100%	100%
User sends a post that should not be linked	100%	33%	0%	0%	0%
Overall Results	47%	38%	49%	49%	49%

UASG004 Verification – Domain Names

- The three desktop browsers successfully linked all of the Domain Name test cases. The Android application was able to link all but the Chinese ‘open dot’ test case (6), while the iOS application was only able to parse four of the ASCII top level domains (1, 2, 3, 10).

UASG004 Verification – Email Addresses

- The desktop browsers all had the same results, linking only two Email Address test cases (12, 20). The Android application was only able to link a single test case (23). The iOS application was able to handle six of the test cases, including the ASCII user @ Hindi and Arabic domain test cases (17, 24).

UASG004 Verification – Path Cases

- Similar to the Domain Name cases, all desktop browsers successfully linked all test cases, tes. The Android application only failed the Chinese ‘open-dot’ test case (43), while the iOS application also failed the other non-ASCII top level domain test cases (41, 42, 45) as well.

UASG010 Verification – User sends a post that can be linked

- All platforms correctly linked all test cases with one exception. T: the Android application was unable to link the email address (49).

UASG010 Verification – User sends a post that should not be linked

- The desktop browsers all incorrectly linked all test cases. The iOS application linked the last two cases (52, 53) while the Android application successfully did not link any of the test cases.

LinkedIn Results conclusions

- LinkedIn's desktop and Android support was fairly good overall, mostly being let down by poor email support. The iOS application trailed slightly behind both with slightly poorer support for non-ASCII domains.

7.8.3 LinkedIn Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	N	N	N
2	www.ua-test.technology	Y	Y	N	N	N
3	www.普遍接受-测试.top	Y	Y	N	N	N
4	www.ua-test.世界	Y	N	N	N	N
5	www.普遍接受-测试.世界	Y	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	N	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	N	N	N	N
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	Y	Y	Y
10	www.اختبار-للقبولاعلالي.top	Y	Y	N	N	N
11	www.اختبار-للقبولاعلاليحكة	Y	N	N	N	N
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	N	Y	Y	Y	Y
13	info2@ua-test.technology	N	Y	Y	Y	Y
14	info3@普遍接受-测试.top	N	Y	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	Y	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	Y	Y	Y
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	Y	Y	Y
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	Y	Y	Y
22	info6@اختبار-للقبولاعلالي.top	N	Y	N	N	N
23	اختبار-للقبولاعلالمى.شبكة	Y	N	N	N	N
24	user@رسيلالسعودية	N	Y	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	सुप्रअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-للقبولاعلالي.top	N	N	N	N	N
36	دون@رسيلالسعودية	N	N	N	N	N
37	مستخدم@رسيلالسعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	Y	N	N	N
39	www.ua-test.technology/我的页面	Y	Y	N	N	N
40	www.普遍接受-测试.top/我的页面	Y	Y	N	N	N
41	www.ua-test.世界/我的页面	Y	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	Y	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-للقبولاعلالي.top/我的页面	Y	Y	N	N	N
45	www.اختبار-للقبولاعلاليحكة/我的页面	Y	N	N	N	N
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	Y	Y	Y	Y
50	example.com	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N	N	N	N
52	http://example.a	N	Y	N	N	N
53	http://example..ab	N	Y	N	N	N
Vkontakte Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	36%	18%	18%	18%
Email Addresses		4%	23%	19%	19%	19%
Path Cases		88%	50%	0%	0%	0%
User sends a post that can be linked		80%	100%	80%	80%	80%
User sends a post that should not be linked		100%	33%	100%	100%	100%
Overall Results		47%	38%	26%	26%	26%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.9 Pinterest

7.9.1 Pinterest Testing Notes

Pinterest is a US based image oriented social networking website with over 175 Million active users.

7.9.2 Pinterest Results Observations

Pinterest Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	9%	0%	9%	9%	9%
Email Addresses	19%	0%	19%	19%	19%
Path Cases	0%	0%	0%	0%	0%
User sends a post that can be linked	0%	0%	80%	80%	80%
User sends a post that should not be linked	100%	100%	33%	33%	33%
Overall Results	17%	6%	21%	21%	21%

UASG004 Verification – Domain Names

- The Android application, and the three desktop browsers only successfully linked the first test case (1), while the iOS application failed to link any.

UASG004 Verification – Email Addresses

- The Android application, and the three desktop browser only successfully linked the five pure ASCII character test cases (12, 13, 19, 20, 21), while the iOS application failed to link any.

UASG004 Verification – Path Cases

- No Path test cases were linked by any applications or browsers.

UASG010 Verification – User sends a post that can be linked

- The two mobile applications failed to link any of the test cases, while the three desktop browsers successfully linked all but the Chinese URL test case (47).

UASG010 Verification – User sends a post that should not be linked

- The two mobile applications correctly did not link any of the test cases, while the three desktop browsers all linked the final two test cases (52, 53).

Pinterest Results conclusions

- Pinterest's results are quite split: at first it appears to break into iOS and the rest, but it could also be seen as mobile and desktop. The iOS application does not link anything, giving it a result of 6%, while the Android application's early success gives it a better 17% success rate. The three desktop browsers performed slightly better again, however their 21% is still at the lower end of the scale.

7.9.3 Pinterest Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	N	Y	Y	Y
2	www.ua-test.technology	N	N	N	N	N
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	N	N	N	N	N
8	www.xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
10	www.اختبار-لاقبولا علالي.top	N	N	N	N	N
11	www.اختبار-لاقبولا علالي.حكة	N	N	N	N	N
<i>Uasg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	Y	N	Y	Y	Y
13	info2@ua-test.technology	Y	N	Y	Y	Y
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	Y	N	Y	Y	Y
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	N	Y	Y	Y
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	Y	Y	Y
22	info6@اختبار-لاقبولا علالي.top	N	N	N	N	N
23	اختبار-القبولا العالمى.شبكة	N	N	N	N	N
24	user@رسيلالسعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युएससजी@डटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولا علالي.top	N	N	N	N	N
36	دون@رسيلالسعودية	N	N	N	N	N
37	مستخدم@رسيلالسعودية	N	N	N	N	N
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا علالي.top/我的页面	N	N	N	N	N
45	www.اختبار-لاقبولا علالي.حكة/我的页面	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	N	N	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	N	N	Y	Y	Y
49	label@example.com	N	N	Y	Y	Y
50	example.com	N	N	Y	Y	Y
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N	N	N	N
52	http://example.a	N	N	Y	Y	Y
53	http://example..ab	N	N	Y	Y	Y

Pinterest Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	9%	0%	9%	9%	9%
Email Addresses	19%	0%	19%	19%	19%
Path Cases	0%	0%	0%	0%	0%
User sends a post that can be linked	0%	0%	80%	80%	80%
User sends a post that should not be linked	100%	100%	33%	33%	33%

Overall Results	17%	6%	21%	21%	21%
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Table Key	Test Pass	Y	Test Fail	N
	Test Linked	Y	Not Linked	N

7.10 QQ

7.10.1 QQ Testing Notes

Tencent QQ is a Chinese based instant messaging service with over 870 Million active users. QQ doesn't support desktop browsers.

7.10.2 QQ Results Observations

QQ Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names	0%	18%			
Uasg004 Verification - Email Addresses	0%	19%			
Uasg004 Verification - Path Cases	0%	0%			
Uasg010 Verification - User sends a post that can be linked	60%	80%			
Uasg010 Verification - User sends a post that should not be linked	100%	33%			
Overall Results	11%	23%			

UASG004 Verification - Domain Names

- The Android application failed to link any test cases, while the iOS application linked two of the Punycode test cases (8,9).

UASG004 Verification - Email Addresses

- The Android application failed to link any test cases, while the iOS application linked the five5 wholly ASCII based test cases (12, 13, 19, 20, 21).

UASG004 Verification - Path Cases

- No test cases were linked for either platform.

UASG010 Verification - User sends a post that can be linked

- Neither platform linked the Chinese URL (47). T, the Android application also failed to link the email address test case (49). All other test cases were successfully linked.

UASG010 Verification - User sends a post that should not be linked

- Both platforms correctly did not link the first test case (51), however the Android application correctly did not link the final two test cases (52, 53), while the iOS application erroneously did.

QQ Results conclusions

- QQ's results overall are fairly poor. The iOS application's 23% success rate is just over twice the 11% success rate of the Android application, purely on being able to link a few of the Domain and Email Addresses test cases. These results put QQ at the lower end of the scale.

7.10.3 QQ Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	N	N			
2	www.ua-test.technology	N	N			
3	www.普遍接受-测试.top	N	N			
4	www.ua-test.世界	N	N			
5	www.普遍接受-测试.世界	N	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	N	N			
8	www.xn----f38am99bqvcd5liy1cxsg.top	N	Y			
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	Y			
10	www.اختبار-لاقبولاعلامي.top	N	N			
11	www.اختبار-لاقبولاعلامي.جدة	N	N			
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	N	Y			
13	info2@ua-test.technology	N	Y			
14	info3@普遍接受-测试.top	N	N			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	N			
17	uasg.tech@डेटामेल.भारत	N	N			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	N	Y			
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	Y			
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	Y			
22	info6@اختبار-لاقبولاعلامي.top	N	N			
23	اختبار-القبولالعالمي.شبكة	N	N			
24	user@رسائلالسعودية	N	N			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	युएएसजी@डेटामेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@اختبار-لاقبولاعلامي.top	N	N			
36	دون@رسائل.السعودية	N	N			
37	مستخدم@رسائل.السعودية	N	N			
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	N	N			
39	www.ua-test.technology/我的页面	N	N			
40	www.普遍接受-测试.top/我的页面	N	N			
41	www.ua-test.世界/我的页面	N	N			
42	www.普遍接受-测试.世界/我的页面	N	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولاعلامي.top/我的页面	N	N			
45	www.اختبار-لاقبولاعلامي.جدة/我的页面	N	N			
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	N	N			
48	www.example.com	Y	Y			
49	label@example.com	N	Y			
50	example.com	Y	Y			
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N			
52	http://example.a	N	Y			
53	http://example..ab	N	Y			
QQ Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		0%	18%			
Email Addresses		0%	19%			
Path Cases		0%	0%			
User sends a post that can be linked		60%	80%			
User sends a post that should not be linked		100%	33%			
Overall Results		11%	23%			
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.11 Qzone

7.11.1 QZone Testing Notes

QZone is a China based blogging and social media platform with around 640 Million active users.

7.11.2 QZone Results Observations

Qzone Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Usag004 Verification - Domain Names	18%	18%	18%	18%	18%
Uasg004 Verification - Email Addresses	0%	0%	0%	0%	0%
Uasg004 Verification - Path Cases	0%	0%	0%	0%	0%
Uasg010 Verification - User sends a post that can be linked	40%	40%	40%	40%	40%
Uasg010 Verification - User sends a post that should not be linked	100%	100%	100%	100%	100%
Overall Results	13%	13%	13%	13%	13%

UASG004 Verification - Domain Names

- QZone has consistent results across all platforms: they all failed every Domain Name test case except for two (1, 8).

UASG004 Verification - Email Addresses

- QZone currently has no support for linking email addresses: all platforms failed all Email Address test cases.

UASG004 Verification - Path Cases

- With no support for Chinese characters in the URL, all Path test cases failed on all platforms.

UASG010 Verification - User sends a post that can be linked

- Again the same results for every platform, only two test cases (46, 48) passed and were correctly linked.

UASG010 Verification - User sends a post that should not be linked

- All platforms passed, not linking any test cases.

QZone Results conclusions

- QZone has consistent results across all platforms, however those results are very poor. Only 13% of test cases passed, and almost half of those were the 'not linked' test cases.

7.11.3 QZone Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	N	N	N	N	N
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	N	N	N	N	N
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
10	www.اختبار-لاقبولا على .top	N	N	N	N	N
11	www.اختبار-لاقبولا على شبكة	N	N	N	N	N
<i>Uasg004 Verification - Email Addresses</i>						
12	info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डॉटमेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-لاقبولا على .top	N	N	N	N	N
23	اختبار-لاقبولا على شبكة	N	N	N	N	N
24	رسالة للسعودية @user	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	यूएसजी@डॉटमेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولا على .top	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	N
37	مستخدم@رسيل.السعودية	N	N	N	N	N
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا على .top/我的页面	N	N	N	N	N
45	www.اختبار-لاقبولا على شبكة/我的页面	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	N	N	N	N
50	example.com	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N	N	N	N
52	http://example.a	N	N	N	N	N
53	http://example..ab	N	N	N	N	N

Qzone Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	18%	18%	18%	18%	18%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	0%	0%	0%	0%	0%
User sends a post that can be linked	40%	40%	40%	40%	40%
User sends a post that should not be linked	100%	100%	100%	100%	100%

Overall Results	13%	13%	13%	13%	13%
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Table Key	Test Pass	Test Fail
Test Linked	Y	Not Linked

7.12 RenRen

7.12.1 Renren Testing Notes

Renren is a China based social networking website with over 240 Million users.

7.12.2 Renren Results Observations

Renren Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	45%	18%	0%	0%	0%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	25%	0%	0%	0%	0%
User sends a post that can be linked	40%	40%	20%	20%	20%
User sends a post that should not be linked	33%	67%	33%	33%	33%
Overall Results	19%	11%	4%	4%	4%

UASG004 Verification – Domain Names

- The three desktop browser s failed to link any of the Domain Name test cases. The iOS application was able to link two cases (1,8), while the Android application was able to link all the fully ASCII cases (1,2,7,8,9).

UASG004 Verification – Email Addresses

- No Email Address test cases were linked across any of the five tested platforms.

UASG004 Verification – Path Cases

- No Path test cases were linked across any of the three desktop platforms or the iOS application. The Android application was able to parse the two ASCII domain/Chinese path test cases (38, 39).

UASG010 Verification – User sends a post that can be linked

- All platforms correctly linked the first case (46), but the desktop platforms failed to link all the other four cases while the two mobile applications were successfully able to link one extra test case (48).

UASG010 Verification – User sends a post that should not be linked

- All platforms correctly did not link the first test case (51) , but all platforms linked both the other two test cases (52, 53) with one exception: the iOS application also correctly did not link <http://example.a> (52).

Renren Results conclusions

- Renren, while consistent across platforms, had fairly poor results. The desktop platforms were particularly poor at a 4% success rate, with one correctly linked test case and one correctly not linked test case. The iOS and Android application success rates of 11% and 19% are an improvement, but still leave Renren at the lower end of the sites tested.

7.12.3 Renren Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	N	N	N
2	www.ua-test.technology	Y	N	N	N	N
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	N	N	N	N
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	Y	N	N	N
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	N	N	N
10	www.اختبار-لاقبوللاعلماي.top	N	N	N	N	N
11	www.اختبار-لاقبوللاعلماي.شبكة	N	N	N	N	N
Uasg004 Verification - Email Addresses						
12	info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-لاقبوللاعلماي.top	N	N	N	N	N
23	اختبار-لاقبوللاعلماي.شبكة	N	N	N	N	N
24	user@رسائلالسعودية	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	सुरअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبوللاعلماي.top	N	N	N	N	N
36	دون@رسائلالسعودية	N	N	N	N	N
37	مستخدم@رسائلالسعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	N	N	N	N
39	www.ua-test.technology/我的页面	Y	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبوللاعلماي.top/我的页面	N	N	N	N	N
45	www.اختبار-لاقبوللاعلماي.شبكة/我的页面	N	N	N	N	N
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	Y	Y	N	N	N
49	label@example.com	N	N	N	N	N
50	example.com	N	N	N	N	N
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N	N	N	N
52	http://example.a	Y	N	Y	Y	Y
53	http://example.ab	Y	Y	Y	Y	Y
Renren Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		45%	18%	0%	0%	0%
Email Addresses		0%	0%	0%	0%	0%
Path Cases		25%	0%	0%	0%	0%
User sends a post that can be linked		40%	40%	20%	20%	20%
User sends a post that should not be linked		33%	67%	33%	33%	33%
Overall Results		19%	11%	4%	4%	4%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.13 Sina Weibo

7.13.1 Sina Weibo Testing Notes

Sina Weibo is a China based micro-blogging website with over 376 Million active users.

7.13.2 Sina Weibo Results Observations

Sina Weibo Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	0%	0%	0%	0%	0%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	0%	0%	0%	0%	0%
User sends a post that can be linked	20%	20%	20%	20%	20%
User sends a post that should not be linked	33%	33%	33%	33%	33%
Overall Results	4%	4%	4%	4%	4%

UASG004 Verification – Domain Names

- No Domain Name test cases were linked across any of the five tested platforms.

UASG004 Verification – Email Addresses

- No Email Address test cases were linked across any of the five tested platforms.

UASG004 Verification – Path Cases

- No Path test cases were linked across any of the five tested platforms.

UASG010 Verification – User sends a post that can be linked

- All platforms correctly linked the first case (46), but failed to link all the other four cases.

UASG010 Verification – User sends a post that should not be linked

- All platforms correctly did not link the first test case (51) but all platforms linked both the other two test cases (52, 53).

Sina Weibo Results conclusions

- Sina Weibo, while consistent across platforms, had very poor results. With one correctly linked test case and one correctly not-linked test case, its overall success rate of 4% puts it firmly at the lower end of the sites tested.

7.13.3 Sina Weibo Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	N	N	N	N	N
2	www.ua-test.technology	N	N	N	N	N
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	N	N	N	N	N
8	www.xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
10	www.اختبار-الاقبولاعلامي.top	N	N	N	N	N
11	www.اختبار-الاقبولاعلامي.شبكة	N	N	N	N	N
<i>Uasg004 Verification - Email Addresses</i>						
12	info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-الاقبولاعلامي.top	N	N	N	N	N
23	اختبار-الاقبولاعلامي.شبكة	N	N	N	N	N
24	رسلالسعودية@user	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	सुरअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-الاقبولاعلامي.top	N	N	N	N	N
36	دون@رسلالسعودية	N	N	N	N	N
37	مستخدم@رسلالسعودية	N	N	N	N	N
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-الاقبولاعلامي.top/我的页面	N	N	N	N	N
45	www.اختبار-الاقبولاعلامي.شبكة/我的页面	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	N	N	N
48	www.example.com	N	N	N	N	N
49	label@example.com	N	N	N	N	N
50	example.com	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http:example.com	N	N	N	N	N
52	http://example.a	Y	Y	Y	Y	Y
53	http://example..ab	Y	Y	Y	Y	Y
Sina Weibo Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		0%	0%	0%	0%	0%
Email Addresses		0%	0%	0%	0%	0%
Path Cases		0%	0%	0%	0%	0%
User sends a post that can be linked		20%	20%	20%	20%	20%
User sends a post that should not be linked		33%	33%	33%	33%	33%
Overall Results		4%	4%	4%	4%	4%
Table Key		Test Pass	Test Fail			
		Y	Not Linked	N		

7.14 Skype

7.14.1 Skype Testing Notes

Skype is a telecommunications application from Microsoft with 300 Million active users.

7.14.2 Skype Results Observations

Skype Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	45%	45%	100%	100%	100%
Email Addresses	12%	12%	0%	0%	0%
Path Cases	25%	0%	100%	100%	100%
User sends a post that can be linked	60%	60%	80%	80%	80%
User sends a post that should not be linked	67%	67%	33%	33%	33%
Overall Results	28%	25%	45%	45%	45%

UASG004 Verification – Domain Names

- The results fall into two distinct sets. All three desktop platforms passed 100% of tests, while both mobile platforms scored 45%, passing only the ASCII based tests.

UASG004 Verification – Email Addresses

- The three desktop platforms failed all email test cases, while the mobile platforms passed three of the ASCII test cases (12, 13, 20).

UASG004 Verification – Path Cases

- This was the one test suite where Android and iOS diverged. iOS failed all test cases, while Android was still able to parse the ASCII Domain/Chinese Path cases (38, 39), but failed the rest. Again we see uniform results across all three desktop platforms with a 100% pass result.

UASG010 Verification – User sends a post that can be linked

- All platforms failed to link the example.com (50), while only the mobile platforms had trouble with the Chinese URL (47).

UASG010 Verification – User sends a post that should not be linked

- All platforms correctly did not link one test case (51) but the desktop platforms linked both the other two (52, 53), while the mobile platforms only linked <http://example.a> (52).

Skype Results conclusions

- Skype clearly has two sets of results. The three desktop platforms were all consistent in their results and came in at a relatively high (for desktop) 45% pass result. The mobile platform results were significantly worse, in particular with their lack of Chinese path support; the Android and iOS success results were 28% and 25% respectively.

7.14.3 Skype Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	N	N	Y	Y	Y
4	www.ua-test.世界	N	N	Y	Y	Y
5	www.普遍接受-测试.世界	N	N	Y	Y	Y
6	www.普遍接受-测试.世界	N	N	Y	Y	Y
7	www.ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
10	www.اختبار-لاقبولاعلي.توب	N	N	Y	Y	Y
11	www.اختبار-لاقبولاعلي.توب	N	N	Y	Y	Y
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	Y	N	N	N
13	info2@ua-test.technology	Y	Y	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	Y	N	N	N
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-لاقبولاعلي.توب	N	N	N	N	N
23	اختبار-القبولالعالمي.شبكة	N	N	N	N	N
24	رسيلالسعودية@user	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युएसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولاعلي.توب	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	N
37	مستخدم@رسيل.السعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	N	Y	Y	Y
39	www.ua-test.technology/我的页面	Y	N	Y	Y	Y
40	www.普遍接受-测试.top/我的页面	N	N	Y	Y	Y
41	www.ua-test.世界/我的页面	N	N	Y	Y	Y
42	www.普遍接受-测试.世界/我的页面	N	N	Y	Y	Y
43	www.普遍接受-测试.世界/我的页面	N	N	Y	Y	Y
44	www.اختبار-لاقبولاعلي.توب/我的页面	N	N	Y	Y	Y
45	www.اختبار-لاقبولاعلي.توب/我的页面	N	N	Y	Y	Y
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	N	N	Y	Y	Y
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	Y	Y	Y	Y	Y
50	example.com	N	N	N	N	N
Uasg010 Verification - User sends a post that should not be linked						
51	http:example.com	N	N	N	N	N
52	http://example.a	Y	Y	Y	Y	Y
53	http://example..ab	N	N	Y	Y	Y
Skype Test Pass Rates						
Domain Names		45%	45%	100%	100%	100%
Email Addresses		12%	12%	0%	0%	0%
Path Cases		25%	0%	100%	100%	100%
User sends a post that can be linked		60%	60%	80%	80%	80%
User sends a post that should not be linked		67%	67%	33%	33%	33%
Overall Results		28%	25%	45%	45%	45%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.15 Snapchat

7.15.1 Snapchat Testing Notes

Snapchat is a US based image and multimedia messaging service with over 161 Million active users. Snapchat is only available on Android and iOS.

7.15.2 Snapchat Results Observations

Snapchat Test Pass Rates			Linux	MacOS	Win10
	Android	iOS	FireFox	Safari	IE11
Domain Names	0%	36%			
Email Addresses	19%	24%			
Path Cases	0%	38%			
User sends a post that can be linked	80%	100%			
User sends a post that should not be linked	100%	0%			
Overall Results	23%	35%			

UASG004 Verification – Domain Names

- The Android application was unable to link any of the test cases, while the iOS application was able to link the non-Punycode ASCII top level domain test cases (1, 2, 3, 10).

UASG004 Verification – Email Addresses

- The Android application successfully linked all the entirely ASCII email test cases. The iOS application successfully linked the ASCII recipient/ASCII top level domain test cases (1, 2, 3, 22) as well as the ASCII recipient/Hindi and Arabic domain test cases (17, 24).

UASG004 Verification – Path Cases

- The Android application failed to link any of the test cases, while the iOS application was also able to link the first three ASCII top level domain test cases (38, 39, 40). There was also an unusual case where the iOS application blocked two test cases (44, 45) with the text “This message contains harmful contents which were removed by Snapchat for your safety”. These were counted as fails for the testing.

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases with one exception: the Android application was unable to link the Chinese URL test case (47).

UASG010 Verification – User sends a post that should not be linked

- The Android application correctly did not link any of the test cases, while the iOS application incorrectly did link all three.

Snapchat Results conclusions

- Snapchat's results are very split by platform. In a fairly unusual case, we have the iOS application with a success rate of 34% performing better than Android at 23%, though both results are still at the low end. In particular, the Android application's inability to link domains at all, and both platforms' inability to link non-ASCII email recipients, significantly bring down their results.

7.15.3 SnapChat Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	N	Y			
2	www.ua-test.technology	N	Y			
3	www.普遍接受-测试.top	N	Y			
4	www.ua-test.世界	N	N			
5	www.普遍接受-测试.世界	N	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	N	N			
8	www.xn---f38am99bqvcd5liy1cxsg.top	N	N			
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
10	www.اختبار-للقبولاعلالي. top	N	Y			
11	www.اختبار-للقبولاعلالي.شبكة	N	N			
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	Y			
13	info2@ua-test.technology	Y	Y			
14	info3@普遍接受-测试.top	N	Y			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	N			
17	uasg.tech@डॉटमेल.भारत	N	Y			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	Y	N			
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	Y	N			
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
22	info6@اختبار-للقبولاعلالي. top	N	Y			
23	اختبار-للقبولاعلالي.شبكة	N	N			
24	USER@رسائلالسعودية	N	Y			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	युएअसजी@डॉटमेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@اختبار-للقبولاعلالي. top	N	N			
36	دون@رسائلالسعودية	N	N			
37	مستخدم@رسائلالسعودية	N	N			
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	N	Y			
39	www.ua-test.technology/我的页面	N	Y			
40	www.普遍接受-测试.top/我的页面	N	Y			
41	www.ua-test.世界/我的页面	N	N			
42	www.普遍接受-测试.世界/我的页面	N	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-للقبولاعلالي. top/我的页面	N	N			
45	www.اختبار-للقبولاعلالي.شبكة/我的页面	N	N			
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	N	Y			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
Uasg010 Verification - User sends a post that should not be linked						
51	http:example.com	N	Y			
52	http://example.a	N	Y			
53	http://example..ab	N	Y			
Snapchat Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		0%	36%			
Email Addresses		19%	23%			
Path Cases		0%	38%			
User sends a post that can be linked		80%	100%			
User sends a post that should not be linked		100%	0%			
Overall Results		23%	34%			
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.16 Telegram

7.16.1 Telegram Testing Notes

Telegram is a US based image oriented social networking website with over 175 Million active users.

7.16.2 Telegram Results Observations

Telegram Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	91%	91%	91%	91%
Email Addresses	92%	92%	92%	92%	92%
Path Cases	88%	88%	88%	88%	88%
User sends a post that can be linked	100%	100%	100%	100%	100%
User sends a post that should not be linked	33%	33%	100%	100%	100%
Overall Results	89%	89%	92%	92%	92%

UASG004 Verification – Domain Names

- All platforms passed all test cases except for the Chinese 'open dot' test case (6).

UASG004 Verification – Email Addresses

- All platforms passed all test cases except for the two Chinese 'open dot' test cases (18, 31)

UASG004 Verification – Path Cases

- All platforms passed all test cases except for the Chinese 'open dot' test case (43).

UASG010 Verification – User sends a post that can be linked

- All platforms passed all test cases.

UASG010 Verification – User sends a post that should not be linked

- All platforms correctly did not link the first test case (51), however the mobile platforms incorrectly linked the following two test cases (52, 53) while the desktop browsers did not.

Telegram Results conclusions

- Telegram's results are very good. Only the Chinese 'open dot' test case gave them any significant trouble. The platform's success rates are the best overall of the project, and only a few specific other applications (e.g. the WhatsApp Android application) compare to the high rate of success Telegram has achieved.

7.16.3 Telegram Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	Y	Y	Y	Y	Y
4	www.ua-test.世界	Y	Y	Y	Y	Y
5	www.普遍接受-测试.世界	Y	Y	Y	Y	Y
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
10	www.اختبار-لاقبولا على .top	Y	Y	Y	Y	Y
11	www.اختبار-لاقبولا على شبكة	Y	Y	Y	Y	Y
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	Y	Y	Y	Y
13	info2@ua-test.technology	Y	Y	Y	Y	Y
14	info3@普遍接受-测试.top	Y	Y	Y	Y	Y
15	info4@ua-test.世界	Y	Y	Y	Y	Y
16	info5@普遍接受-测试.世界	Y	Y	Y	Y	Y
17	uasg.tech@डॉटमेल.भारत	Y	Y	Y	Y	Y
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
22	info6@اختبار-لاقبولا على .top	Y	Y	Y	Y	Y
23	اختبار-القبول على شبكة	Y	Y	Y	Y	Y
24	user@رسائل السعودية	Y	Y	Y	Y	Y
25	测试1@ua-test.link	Y	Y	Y	Y	Y
26	测试2@ua-test.technology	Y	Y	Y	Y	Y
27	测试3@普遍接受-测试.top	Y	Y	Y	Y	Y
28	测试4@ua-test.世界	Y	Y	Y	Y	Y
29	测试5@普遍接受-测试.世界	Y	Y	Y	Y	Y
30	यूएसजी@डॉटमेल.भारत	Y	Y	Y	Y	Y
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y	Y	Y	Y
35	测试6@اختبار-لاقبولا على .top	Y	Y	Y	Y	Y
36	دون@رسائل السعودية	Y	Y	Y	Y	Y
37	مستخدم@رسائل السعودية	Y	Y	Y	Y	Y
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	Y	Y	Y	Y	Y
39	www.ua-test.technology/我的页面	Y	Y	Y	Y	Y
40	www.普遍接受-测试.top/我的页面	Y	Y	Y	Y	Y
41	www.ua-test.世界/我的页面	Y	Y	Y	Y	Y
42	www.普遍接受-测试.世界/我的页面	Y	Y	Y	Y	Y
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا على .top/我的页面	Y	Y	Y	Y	Y
45	www.اختبار-لاقبولا على شبكة/我的页面	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	Y	Y	Y
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	Y	Y	Y	Y	Y
50	example.com	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N	N	N	N
52	http://example.a	Y	Y	N	N	N
53	http://example..ab	Y	Y	N	N	N
Telegram Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	91%	91%	91%	91%
Email Addresses		92%	92%	92%	92%	92%
Path Cases		88%	88%	88%	88%	88%
User sends a post that can be linked		100%	100%	100%	100%	100%
User sends a post that should not be linked		33%	33%	100%	100%	100%
Overall Results		89%	89%	92%	92%	92%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	
		Y	N	Y	N	

7.17 Tumblr

7.17.1 Tumblr Testing Notes

Tumblr is a US based microblogging and social networking site.

7.17.2 Tumblr Results Observations

Tumblr Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names	27%	36%	27%	27%	64%
Uasg004 Verification - Email Addresses	0%	23%	0%	0%	42%
Uasg004 Verification - Path Cases	25%	50%	25%	25%	0%
Uasg010 Verification - User sends a post that can be linked	80%	100%	40%	40%	60%
Uasg010 Verification - User sends a post that should not be linked	67%	33%	67%	67%	33%
Overall Results	21%	38%	17%	17%	42%

UASG004 Verification - Domain Names

- Internet Explorer was overwhelmingly the best performer with a 64% success rate, failing only the four Chinese character test cases (3, 4, 5, 6). The other platforms followed a fairly consistent behaviour of handling most of the ASCII character test cases while failing the rest, except for the iOS application, which handled Chinese (3) and Arabic (10) URLs with ASCII top level domains.

UASG004 Verification - Email Addresses

- The Android application, Firefox, and Safari all had no support of linking email addresses. Internet Explorer once again had the best results, linking all the non-Chinese character test cases, while the iOS application had slightly worse results, missing the entirely Arabic (36, 37) and Hindi (30) email addresses.

UASG004 Verification - Path Cases

- In a reversal of the previous sets, Internet Explorer actually had the poorest performance at 0%: it did not successfully link any addresses with Chinese characters in the path. The other four platforms all performed similarly, only linking the ASCII domain with Chinese path test cases (38, 39). The iOS application also managed to link the Chinese and Arabic URLs with ASCII top level domains (40, 44).

UASG010 Verification - User sends a post that can be linked

- The iOS application was the only platform to pass all tests. The Android application missed the email address test case (49). Internet Explorer missed two cases (47, 50), while Firefox and Safari both had troubling linking the same three cases (47, 49, 50).

UASG010 Verification - User sends a post that should not be linked

- All platforms incorrectly linked <http://example.a> (52), and correctly did not link <http://example.com> (51). Only iOS and Internet Explorer linked <http://example..ab> (53)

Tumblr Results conclusions

- Tumblr has unusual results in that the iOS application and Internet Explorer, despite their average results overall, were the best performers, though their results in incorrectly linking items they shouldn't suggests this might be a case of over-eagerness rather than correct rule following.

7.17.3 Tumblr Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	N	Y	N	N	N
4	www.ua-test.世界	N	N	N	N	N
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试。世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	N	N	N	N	Y
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	N	Y	Y	Y
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	Y
10	www.اختبار-لاقبولا عالمي.top	N	Y	N	N	Y
11	www.اختبار-لاقبولا عالمي شبكة	N	N	N	N	Y
<i>Uasg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	N	Y	N	N	Y
13	info2@ua-test.technology	N	Y	N	N	Y
14	info3@普遍接受-测试.top	N	Y	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	Y	N	N	Y
18	info5@普遍接受-测试。世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	Y
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	N	N	N	N	Y
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	Y
22	info6@اختبار-لاقبولا عالمي.top	N	Y	N	N	Y
23	اختبار-القبولالعالمي.شبكة	N	N	N	N	N
24	user@رسيلالسعودية	N	Y	N	N	Y
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	युएअसजी@डेटामेल.भारत	N	N	N	N	Y
31	测试5@普遍接受-测试。世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولا عالمي.top	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	Y
37	مستخدم@رسيل.السعودية	N	N	N	N	Y
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y	Y	Y	N
39	www.ua-test.technology/我的页面	Y	Y	Y	Y	N
40	www.普遍接受-测试.top/我的页面	N	Y	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试。世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا عالمي.top/我的页面	N	Y	N	N	N
45	www.اختبار-لاقبولا عالمي شبكة/我的页面	N	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	Y	N	N	Y
50	example.com	Y	Y	N	N	N
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http:example.com	N	N	N	N	N
52	http://example.a	Y	Y	Y	Y	Y
53	http://example..ab	N	Y	N	N	Y

Tumblr Test Pass Results	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	27%	36%	27%	27%	64%
Email Addresses	0%	23%	0%	0%	42%
Path Cases	25%	50%	25%	25%	0%
User sends a post that can be linked	80%	100%	40%	40%	60%
User sends a post that should not be linked	67%	33%	67%	67%	33%

Overall Results	21%	38%	17%	17%	42%
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Table Key	Test Pass	Y	Test Fail	N
	Test Linked	Y	Not Linked	N

7.18 Twitter

7.18.1 Twitter Testing Notes

Twitter is a US based news and social networking service and photo sharing application service owned by Facebook with over 800 million active users.

7.18.2 Twitter Results Observations

Twitter Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Usag004 Verification - Domain Names	55%	55%	55%	55%	55%
Uasg004 Verification - Email Addresses	0%	0%	0%	0%	0%
Uasg004 Verification - Path Cases	0%	0%	0%	0%	0%
Uasg010 Verification - User sends a post that can be linked	80%	80%	80%	80%	80%
Uasg010 Verification - User sends a post that should not be linked	100%	100%	100%	100%	100%
Overall Results	25%	25%	25%	25%	25%

UASG004 Verification - Domain Names

- Twitter did not link any Domain Name test cases with non-ASCII characters as part of the domain (3, 5, 6, 10, 11).

UASG004 Verification - Email Addresses

- Twitter did not link any Email Address test cases on any platform.

UASG004 Verification - Path Cases

- Twitter did not link any Path test cases on any platform.

UASG010 Verification - User sends a post that can be linked

- Twitter successfully linked all test cases on all platforms except for the email address test case (49).

UASG010 Verification - User sends a post that should not be linked

- Twitter passed all test cases as it did not link any test cases on any platform.

Twitter Results conclusions

- Twitter is a relatively unusual platform in that it is one of the few that had perfectly consistent results across all platforms. However as it only links purely ASCII domains and no email addresses, it only passed 25% of the test cases overall.

7.18.3 Twitter Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	N	N	N	N	N
4	www.ua-test.世界	Y	Y	Y	Y	Y
5	www.普遍接受-测试.世界	N	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	Y	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv9	Y	Y	Y	Y	Y
10	www.اختبار-لاقبولا على .top	N	N	N	N	N
11	www.اختبار-لاقبولا على شبكة .top	N	N	N	N	N
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	N	N	N	N	N
13	info2@ua-test.technology	N	N	N	N	N
14	info3@普遍接受-测试.top	N	N	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	N	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
22	info6@اختبار-لاقبولا على .top	N	N	N	N	N
23	اختبار-القبولا على شبكة .top	N	N	N	N	N
24	رابط للسعودية @user	N	N	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	मुएअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-لاقبولا على .top	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	N
37	مستخدم@رسيل.السعودية	N	N	N	N	N
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	N	N	N	N	N
39	www.ua-test.technology/我的页面	N	N	N	N	N
40	www.普遍接受-测试.top/我的页面	N	N	N	N	N
41	www.ua-test.世界/我的页面	N	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا على .top/我的页面	N	N	N	N	N
45	www.اختبار-لاقبولا على شبكة /我的页面	N	N	N	N	N
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	Y	Y	Y
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	N	N	N	N
50	example.com	Y	Y	Y	Y	Y
Uasg010 Verification - User sends a post that should not be linked						
51	http:example.com	N	N	N	N	N
52	http://example.a	N	N	N	N	N
53	http://example..ab	N	N	N	N	N

Twitter Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	55%	55%	55%	55%	55%
Email Addresses	0%	0%	0%	0%	0%
Path Cases	0%	0%	0%	0%	0%
User sends a post that can be linked	80%	80%	80%	80%	80%
User sends a post that should not be linked	100%	100%	100%	100%	100%

Overall Results	25%	25%	25%	25%	25%
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Table Key	Test Pass	Y	Test Fail	N
	Test Linked	Y	Not Linked	N

7.19 Viber

7.19.1 Viber Testing Notes

Viber is a Japan based instant messaging and voice over IP service with over 250 Million active users. Viber requires the use of a desktop application to use under Linux, Mac, and Windows, so those platforms were deemed out of scope at this time.

7.19.2 Viber Results Observations

Viber Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	91%			
Email Addresses	46%	23%			
Path Cases	88%	50%			
User sends a post that can be linked	100%	100%			
User sends a post that should not be linked	100%	33%			
Overall Results	70%	49%			

UASG004 Verification – Domain Names

- Both Android and iOS successfully linked all test cases, except for the Chinese ‘open dot’ test case (6).

UASG004 Verification – Email Addresses

- The Android application successfully linked all the ASCII Email Address test cases, except for the Chinese ‘open dot’ test case (22) and then, like the iOS application, failed to link the Chinese, Hindu, and Arabic recipient test cases (25-37). The iOS application only linked a smaller set of the ASCII recipients, being unable to parse the Chinese and Punycode top level domain test cases (15, 16, 18-21).

UASG004 Verification – Path Cases

- The Android application successfully linked all but the Chinese ‘open dot’ test case (43), while the iOS application was also unable to link the non-ASCII top level domain test cases (41, 42, 45).

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases.

UASG010 Verification – User sends a post that should not be linked

- Both platforms correctly did not link the first test case (51), however the Android application correctly did not link the final two test cases (52, 53), while the iOS application erroneously did.

Viber Results conclusions

- Viber's results are very split by platform. While the Android application's 70% success rate puts it firmly in the top tier of results, the iOS application's inability to link the Chinese domains brought it

back to a much more middle of the pack 49%. Both platforms struggled equally with the Chinese 'open dot' test cases, and non-ASCII email recipients.

7.19.3 Viber Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y			
2	www.ua-test.technology	Y	Y			
3	www.普遍接受-测试.top	Y	Y			
4	www.ua-test.世界	Y	Y			
5	www.普遍接受-测试.世界	Y	Y			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	Y	Y			
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y			
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	Y			
10	www.اختبار-لاقبولا على .top	Y	Y			
11	www.اختبار-لاقبولا على شبكة	Y	Y			
<i>Uasg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	Y	Y			
13	info2@ua-test.technology	Y	Y			
14	info3@普遍接受-测试.top	Y	Y			
15	info4@ua-test.世界	Y	N			
16	info5@普遍接受-测试.世界	Y	N			
17	uasg.tech@डॉटमेल.भारत	Y	Y			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	Y	N			
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	N			
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
22	info6@اختبار-لاقبولا على .top	Y	Y			
23	اختبار-القبولالعالمي.شبكة	Y	N			
24	user@رسائلالسعودية	Y	Y			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	युएसजी@डॉटमेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@اختبار-لاقبولا على .top	N	N			
36	دون@رسائل.السعودية	N	N			
37	مستخدم@رسائل.السعودية	N	N			
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y			
39	www.ua-test.technology/我的页面	Y	Y			
40	www.普遍接受-测试.top/我的页面	Y	Y			
41	www.ua-test.世界/我的页面	Y	N			
42	www.普遍接受-测试.世界/我的页面	Y	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولا على .top/我的页面	Y	Y			
45	www.اختبار-لاقبولا على شبكة/我的页面	Y	N			
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	Y	Y			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N			
52	http://example.a	N	Y			
53	http://example..ab	N	Y			
Viber Test Pass Rates		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	91%			
Email Addresses		46%	23%			
Path Cases		88%	50%			
User sends a post that can be linked		100%	100%			
User sends a post that should not be linked		100%	33%			
Overall Results		70%	49%			
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.20 VKontakte

7.20.1 VKontakte Testing Notes

VKontakte is a Russia based social networking website with over 100 Million active users.

7.20.2 VKontakte Results Observations

Vkontakte Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	18%	18%	18%
Email Addresses	4%	23%	19%	19%	19%
Path Cases	88%	50%	0%	0%	0%
User sends a post that can be linked	80%	100%	80%	80%	80%
User sends a post that should not be linked	100%	33%	100%	100%	100%
Overall Results	47%	38%	26%	26%	26%

UASG004 Verification – Domain Names

- All platforms failed to link the Chinese 'open dot' test case (6), but that was the only failed case for the Android application. The iOS application failed all the non-ASCII (4, 5, 6, 11) and Punycode (7, 8, 9) test cases. The three desktop browsers failed to link most cases, except for two of the Punycode test cases (7, 9).

UASG004 Verification – Email Addresses

- The desktop browsers all had the same results, linking only the first two ASCII email test cases (12, 13) and the Punycode test cases (19, 20, 21). The Android application was only able to link a single test case (23). The iOS application was able to handle six of the test cases, including the ASCII user @ Hindi and Arabic domain test cases (17, 24).

UASG004 Verification – Path Cases

- The Android application only failed the Chinese 'open-dot' test case (43), while the iOS application also failed the other non-ASCII top level domain test cases (41, 42, 45) as well. The three desktop browsers failed all test cases.

UASG010 Verification – User sends a post that can be linked

- The iOS application successfully linked all test cases, while the Android application only failed on the email address (49). The desktop browsers passed all tests except for the Chinese URL (47).

UASG010 Verification – User sends a post that should not be linked

- The desktop browsers and the Android application all correctly did not link any of the test cases. The iOS application however linked the final two (52, 53)

VKontakte Results conclusions

- VKontakte's results varied quite significantly across the different platforms. The Android application performed relatively well, but still only achieved a 47% success rate across all tests. The iOS application was a bit further back at 38%, in particular due to it not parsing non-ASCII domains, and the desktop browsers were all uniform at 26% overall.

7.20.3 VKontakte Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y	N	N	N
2	www.ua-test.technology	Y	Y	N	N	N
3	www.普遍接受-测试.top	Y	Y	N	N	N
4	www.ua-test.世界	Y	N	N	N	N
5	www.普遍接受-测试.世界	Y	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	N	Y	Y	Y
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	N	N	N	N
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	Y	Y	Y
10	www.اختبار-للقبولاعلالي.top	Y	Y	N	N	N
11	www.اختبار-للقبولاعلاليحكة	Y	N	N	N	N
<i>Uasg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	N	Y	Y	Y	Y
13	info2@ua-test.technology	N	Y	Y	Y	Y
14	info3@普遍接受-测试.top	N	Y	N	N	N
15	info4@ua-test.世界	N	N	N	N	N
16	info5@普遍接受-测试.世界	N	N	N	N	N
17	uasg.tech@डेटामेल.भारत	N	Y	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	N	N	Y	Y	Y
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	N	N	Y	Y	Y
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	Y	Y	Y
22	info6@اختبار-للقبولاعلالي.top	N	Y	N	N	N
23	اختبار-للقبولاعلالمى.شبكة	Y	N	N	N	N
24	user@رسيلالسعودية	N	Y	N	N	N
25	测试1@ua-test.link	N	N	N	N	N
26	测试2@ua-test.technology	N	N	N	N	N
27	测试3@普遍接受-测试.top	N	N	N	N	N
28	测试4@ua-test.世界	N	N	N	N	N
29	测试5@普遍接受-测试.世界	N	N	N	N	N
30	सुप्रअसजी@डेटामेल.भारत	N	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	N	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N	N	N	N
35	测试6@اختبار-للقبولاعلالي.top	N	N	N	N	N
36	دون@رسيل.السعودية	N	N	N	N	N
37	مستخدم@رسيل.السعودية	N	N	N	N	N
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y	N	N	N
39	www.ua-test.technology/我的页面	Y	Y	N	N	N
40	www.普遍接受-测试.top/我的页面	Y	Y	N	N	N
41	www.ua-test.世界/我的页面	Y	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	Y	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-للقبولاعلالي.top/我的页面	Y	Y	N	N	N
45	www.اختبار-للقبولاعلاليحكة/我的页面	Y	N	N	N	N
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	N	Y	Y	Y	Y
50	example.com	Y	Y	Y	Y	Y
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N	N	N	N
52	http://example.a	N	Y	N	N	N
53	http://example..ab	N	Y	N	N	N
Vkontakte Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		91%	36%	18%	18%	18%
Email Addresses		4%	23%	19%	19%	19%
Path Cases		88%	50%	0%	0%	0%
User sends a post that can be linked		80%	100%	80%	80%	80%
User sends a post that should not be linked		100%	33%	100%	100%	100%
Overall Results		47%	38%	26%	26%	26%
Table Key		Test Pass	Test Fail	Test Linked	Not Linked	N

7.21 Wechat

7.21.1 WeChat Testing Notes

WeChat is a Chinese based social media service with over 980 Million active users. WeChat is available on desktop, but as it restricts desktop use to established accounts, we were unable to test it at this time.

WeChat returned slightly worse results if the tests were pasted in as a group rather than line by line. The line by line results are used here.

7.21.2 WeChat Results Observations

WeChat Test Pass Rates			Linux	MacOS	Win10
	Android	iOS	FireFox	Safari	IE11
Domain Names	18%	36%			
Email Addresses	12%	0%			
Path Cases	0%	0%			
User sends a post that can be linked	80%	80%			
User sends a post that should not be linked	100%	67%			
Overall Results	23%	19%			

UASG004 Verification – Domain Names

- Neither application linked many Domain Name test cases. Both applications successfully linked test cases 1 and 8, while the iOS application was also able to link 2 and 3.

UASG004 Verification – Email Addresses

- The Android application successfully linked the first two cases (12, 13) and one of the Punycode test cases (20). The iOS application failed to successfully link any Email Address test cases.

UASG004 Verification – Path Cases

- Neither application successfully linked any Path test cases.

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS successfully linked all test cases with one exception, but neither application was unable to link the Chinese URL test case (47).

UASG010 Verification – User sends a post that should not be linked

- Both applications correctly did not link any test cases, with one exception, : the iOS application incorrectly linked one test case (52).

WeChat Results conclusions

- WeChat's results are slightly split by platform. While they passed different test cases, the overall success rates for Android (23%) and iOS (19%) were still relatively close. WeChat had very limited

support for linking the Domain Name and Email Address test cases, leading to results at the lower end of the scale for this test.

7.21.3 WeChat Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Uasg004 Verification - Domain Names						
1	www.ua-test.link	Y	Y			
2	www.ua-test.technology	N	Y			
3	www.普遍接受-测试.top	N	N			
4	www.ua-test.世界	N	N			
5	www.普遍接受-测试.世界	N	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	N	Y			
8	www.xn---f38am99bqvcd5liy1cxsg.top	Y	Y			
9	www.xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
10	www.اختبار-لاقبولا عالمي.top	N	N			
11	www.اختبار-لاقبولا عالمي شبكة	N	N			
Uasg004 Verification - Email Addresses						
12	Info1@ua-test.link	Y	N			
13	info2@ua-test.technology	Y	N			
14	info3@普遍接受-测试.top	N	N			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	N			
17	uasg.tech@डॉटमेल.भारत	N	N			
18	info5@普遍接受-测试.世界	N	N			
19	Info4@ua-test.xn--rhqv96g	N	N			
20	Info3@xn---f38am99bqvcd5liy1cxsg.top	Y	N			
21	Info5@xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
22	info6@اختبار-لاقبولا عالمي.top	N	N			
23	اختبار-لاقبولا عالمي شبكة	N	N			
24	user@رسول السعوية	N	N			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	युएसजी@डॉटमेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn---f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn---f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@اختبار-لاقبولا عالمي.top	N	N			
36	دون@رسول السعوية	N	N			
37	مستخدم@رسول السعوية	N	N			
Uasg004 Verification - Path Cases						
38	www.ua-test.link/我的页面	N	N			
39	www.ua-test.technology/我的页面	N	N			
40	www.普遍接受-测试.top/我的页面	N	N			
41	www.ua-test.世界/我的页面	N	N			
42	www.普遍接受-测试.世界/我的页面	N	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.اختبار-لاقبولا عالمي.top/我的页面	N	N			
45	www.اختبار-لاقبولا عالمي شبكة/我的页面	N	N			
Uasg010 Verification - User sends a post that can be linked						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	N	N			
48	www.example.com	Y	Y			
49	label@example.com	Y	Y			
50	example.com	Y	Y			
Uasg010 Verification - User sends a post that should not be linked						
51	http://example.com	N	N			
52	http://example.a	N	Y			
53	http://example..ab	N	N			
WeChat Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		18%	36%			
Email Addresses		12%	0%			
Path Cases		0%	0%			
User sends a post that can be linked		80%	80%			
User sends a post that should not be linked		100%	67%			
Overall Results		23%	19%			
Table Key		Test Pass	Test Fail			
		Test Linked	Not Linked		N	

7.22 WhatsApp

7.22.1 WhatsApp Testing Notes

WhatsApp Messenger is a US based multi-platform instant messaging and Voice over IP service with currently over 1.2 Billion active users.

7.22.2 WhatsApp Results Observations

WhatsApp Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	45%	45%	45%
Email Addresses	92%	23%	19%	19%	19%
Path Cases	88%	50%	50%	50%	50%
User sends a post that can be linked	100%	100%	80%	80%	80%
User sends a post that should not be linked	100%	33%	100%	100%	100%
Overall Results	92%	38%	40%	40%	40%

UASG004 Verification – Domain Names

- Android performed very well here, only failing on the Chinese ‘open dot’ character (6) as all platforms did. The other four platforms all failed on the non-ASCII top level domains (4, 5, 6, 7, 9, 11) while the iOS application was also unable to parse a Punycode test case (8).

UASG004 Verification – Email Addresses

- Once again, the Android application was able to handle all test cases, except for failing the Chinese ‘open dot’ character test (18, 31) along with all the other platforms. The other four platforms once again followed the general case of not handling the non-ASCII top level domains. However the iOS application was able to parse the email addresses with Hindi (17) and Arabic (24) domains.

UASG004 Verification – Path Cases

- As with the Domain Names cases and Email Addresses, the Android Application passed all tests except the Chinese ‘open dot’ character (43) along with the other four platforms. And again the four remaining platforms all failed to parse the non-ASCII domains to link their respective path cases.

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS passed all of these tests. The three desktop platforms all failed the same Chinese domain example (47).

UASG010 Verification – User sends a post that should not be linked

- Android, Firefox, Safari, and Internet Explorer all successfully passed these test cases, not linking any of the examples. IOS, however, incorrectly linked the final two (52, 53).

WhatsApp Results conclusions

- The Android WhatsApp application with a success rate of 92% is one of the standouts of the entire test suite. The other four platforms performed averagely at best, with the iOS application's 38% keeping it slightly behind the pack.

7.22.3 WhatsApp Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Usg004 Verification - Domain Names</i>						
1	www.ua-test.link	Y	Y	Y	Y	Y
2	www.ua-test.technology	Y	Y	Y	Y	Y
3	www.普遍接受-测试.top	Y	Y	Y	Y	Y
4	www.ua-test.世界	Y	N	N	N	N
5	www.普遍接受-测试.世界	Y	N	N	N	N
6	www.普遍接受-测试.世界	N	N	N	N	N
7	www.ua-test.xn--rhqv96g	Y	N	N	N	N
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	N	Y	Y	Y
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	N	N	N
10	www.اختبار-لاقبولا.عالمي.top	Y	Y	Y	Y	Y
11	www.اختبار-لاقبولا.عالمي.جدة	Y	N	N	N	N
<i>Usg004 Verification - Email Addresses</i>						
12	Info1@ua-test.link	Y	Y	Y	Y	Y
13	info2@ua-test.technology	Y	Y	Y	Y	Y
14	info3@普遍接受-测试.top	Y	Y	Y	Y	Y
15	info4@ua-test.世界	Y	N	N	N	N
16	info5@普遍接受-测试.世界	Y	N	N	N	N
17	uasg.tech@डेटामेल.भारत	Y	Y	N	N	N
18	info5@普遍接受-测试.世界	N	N	N	N	N
19	Info4@ua-test.xn--rhqv96g	Y	N	N	N	N
20	Info3@xn----f38am99bqvcd5liy1cxsg.top	Y	N	Y	Y	Y
21	Info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	N	N	N
22	info6@اختبار-لاقبولا.عالمي.top	Y	Y	Y	Y	Y
23	اختبار-القبولالعالمي.شبكة	Y	N	N	N	N
24	user@رسيل.السعودية	Y	Y	N	N	N
25	测试1@ua-test.link	Y	N	N	N	N
26	测试2@ua-test.technology	Y	N	N	N	N
27	测试3@普遍接受-测试.top	Y	N	N	N	N
28	测试4@ua-test.世界	Y	N	N	N	N
29	测试5@普遍接受-测试.世界	Y	N	N	N	N
30	युएसजी@डेटामेल.भारत	Y	N	N	N	N
31	测试5@普遍接受-测试.世界	N	N	N	N	N
32	测试4@ua-test.xn--rhqv96g	Y	N	N	N	N
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	Y	N	N	N	N
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N	N	N	N
35	测试6@اختبار-لاقبولا.عالمي.top	Y	N	N	N	N
36	دون@رسيل.السعودية	Y	N	N	N	N
37	مستخدم@رسيل.السعودية	Y	N	N	N	N
<i>Usg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	Y	Y	Y	Y	Y
39	www.ua-test.technology/我的页面	Y	Y	Y	Y	Y
40	www.普遍接受-测试.top/我的页面	Y	Y	Y	Y	Y
41	www.ua-test.世界/我的页面	Y	N	N	N	N
42	www.普遍接受-测试.世界/我的页面	Y	N	N	N	N
43	www.普遍接受-测试.世界/我的页面	N	N	N	N	N
44	www.اختبار-لاقبولا.عالمي.top/我的页面	Y	Y	Y	Y	Y
45	www.اختبار-لاقبولا.عالمي.جدة/我的页面	Y	N	N	N	N
<i>Usg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y	Y	Y	Y
47	http://普遍接受-测试.世界	Y	Y	N	N	N
48	www.example.com	Y	Y	Y	Y	Y
49	label@example.com	Y	Y	Y	Y	Y
50	example.com	Y	Y	Y	Y	Y
<i>Usg010 Verification - User sends a post that should not be linked</i>						
51	http:example.com	N	N	N	N	N
52	http://example.a	N	Y	N	N	N
53	http://example..ab	N	Y	N	N	N

WhatsApp Test Pass Rates	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names	91%	36%	45%	45%	45%
Email Addresses	92%	23%	19%	19%	19%
Path Cases	88%	50%	50%	50%	50%
User sends a post that can be linked	100%	100%	80%	80%	80%
User sends a post that should not be linked	100%	33%	100%	100%	100%

Overall Results	92%	38%	40%	40%	40%
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Table Key	Test Pass	Y	Test Fail	N
	Test Linked	Y	Not Linked	N

7.23 YY

7.23.1 YY Testing Notes

YY is a China based video messaging service with over 120 Million active users. YY testing was unable to be completed on desktop platforms, because YY does not allow users to send messages with URLs or email addresses.

7.23.2 YY Results Observations

YY Test Pass Rates			Linux	MacOS	Win10
	Android	iOS	FireFox	Safari	IE11
Domain Names	18%	18%			
Email Addresses	0%	0%			
Path Cases	0%	0%			
User sends a post that can be linked	40%	40%			
User sends a post that should not be linked	33%	67%			
Overall Results	9%	11%			

UASG004 Verification – Domain Names

- The Android application was only able to link two of the Punycode test cases (8,9), while the iOS application was only able to link one Punycode test case (8) and the first test case (1).

UASG004 Verification – Email Addresses

- Neither the Android nor iOS applications successfully linked any of the Email Address test cases.

UASG004 Verification – Path Cases

- Neither the Android or iOS applications successfully linked any of the Path test cases.

UASG010 Verification – User sends a post that can be linked

- Both Android and iOS only successfully linked two of the URL test cases (46, 48).

UASG010 Verification – User sends a post that should not be linked

- The Android application correctly did not link the first test case (51) but incorrectly linked the final two (52, 53). While the iOS application correctly did not link the first two test cases (51, 52), but it did link the final one (53).

YY Results conclusions

- YY's Android results of 9% and iOS results of 11% put it firmly near the bottom of the pack. YY was particularly hurt by its inability to link email addresses at all, though results for all sections were poor.

7.23.3 YY Results Table

Test ID	Test Data	Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
<i>Uasg004 Verification - Domain Names</i>						
1	www.ua-test.link	N	Y			
2	www.ua-test.technology	N	N			
3	www.普遍接受-测试.top	N	N			
4	www.ua-test.世界	N	N			
5	www.普遍接受-测试.世界	N	N			
6	www.普遍接受-测试.世界	N	N			
7	www.ua-test.xn--rhqv96g	N	N			
8	www.xn----f38am99bqvcd5liy1cxsg.top	Y	Y			
9	www.xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	Y	N			
10	www.اختبار-لاقبولا على .top	N	N			
11	www.اختبار-لاقبولا على شبكة	N	N			
<i>Uasg004 Verification - Email Addresses</i>						
12	info1@ua-test.link	N	N			
13	info2@ua-test.technology	N	N			
14	info3@普遍接受-测试.top	N	N			
15	info4@ua-test.世界	N	N			
16	info5@普遍接受-测试.世界	N	N			
17	uasg.tech@डेटामेल.भारत	N	N			
18	info5@普遍接受-测试.世界	N	N			
19	info4@ua-test.xn--rhqv96g	N	N			
20	info3@xn----f38am99bqvcd5liy1cxsg.top	N	N			
21	info5@xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
22	info6@اختبار-لاقبولا على .top	N	N			
23	اختبار-القبول العالمي.شبكة	N	N			
24	رسل@السعودية	N	N			
25	测试1@ua-test.link	N	N			
26	测试2@ua-test.technology	N	N			
27	测试3@普遍接受-测试.top	N	N			
28	测试4@ua-test.世界	N	N			
29	测试5@普遍接受-测试.世界	N	N			
30	सुरअसजी@डेटामेल.भारत	N	N			
31	测试5@普遍接受-测试.世界	N	N			
32	测试4@ua-test.xn--rhqv96g	N	N			
33	测试3@ xn----f38am99bqvcd5liy1cxsg.top	N	N			
34	测试5@ xn----f38am99bqvcd5liy1cxsg.xn--rhqv96g	N	N			
35	测试6@ختبار-لاقبولا على .top	N	N			
36	دون@رسل.السعودية	N	N			
37	مستخدم@رسل.السعودية	N	N			
<i>Uasg004 Verification - Path Cases</i>						
38	www.ua-test.link/我的页面	N	N			
39	www.ua-test.technology/我的页面	N	N			
40	www.普遍接受-测试.top/我的页面	N	N			
41	www.ua-test.世界/我的页面	N	N			
42	www.普遍接受-测试.世界/我的页面	N	N			
43	www.普遍接受-测试.世界/我的页面	N	N			
44	www.ختبار-لاقبولا على .top/我的页面	N	N			
45	www.اختبار-لاقبولا على شبكة/我的页面	N	N			
<i>Uasg010 Verification - User sends a post that can be linked</i>						
46	http://example.com	Y	Y			
47	http://普遍接受-测试.世界	N	N			
48	www.example.com	Y	Y			
49	label@example.com	N	N			
50	example.com	N	N			
<i>Uasg010 Verification - User sends a post that should not be linked</i>						
51	http://example.com	N	N			
52	http://example.a	Y	N			
53	http://example.ab	Y	Y			
YY Test Pass Rates						
		Android	iOS	Linux FireFox	MacOS Safari	Win10 IE11
Domain Names		18%	18%			
Email Addresses		0%	0%			
Path Cases		0%	0%			
User sends a post that can be linked		40%	40%			
User sends a post that should not be linked		33%	67%			
Overall Results		9%	11%			
Table Key						
	Test Pass	Y	Y	Test Fail	N	
	Test Linked	Y	Y	Not Linked	N	

8 Appendix E – References

- [1] <http://appium.io/>
- [2] <https://developer.apple.com/xcode/>
- [3] <https://github.com/facebook/WebDriverAgent>
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