



# RantCell Enterprise User Guide



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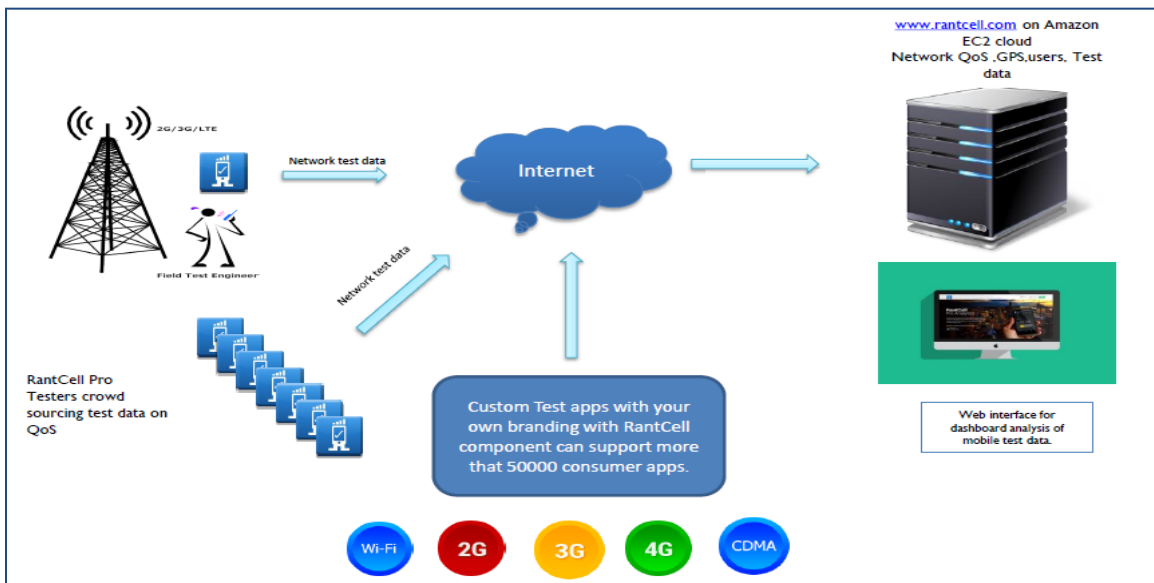


# 1. Introduction:

## About RantCell Enterprise

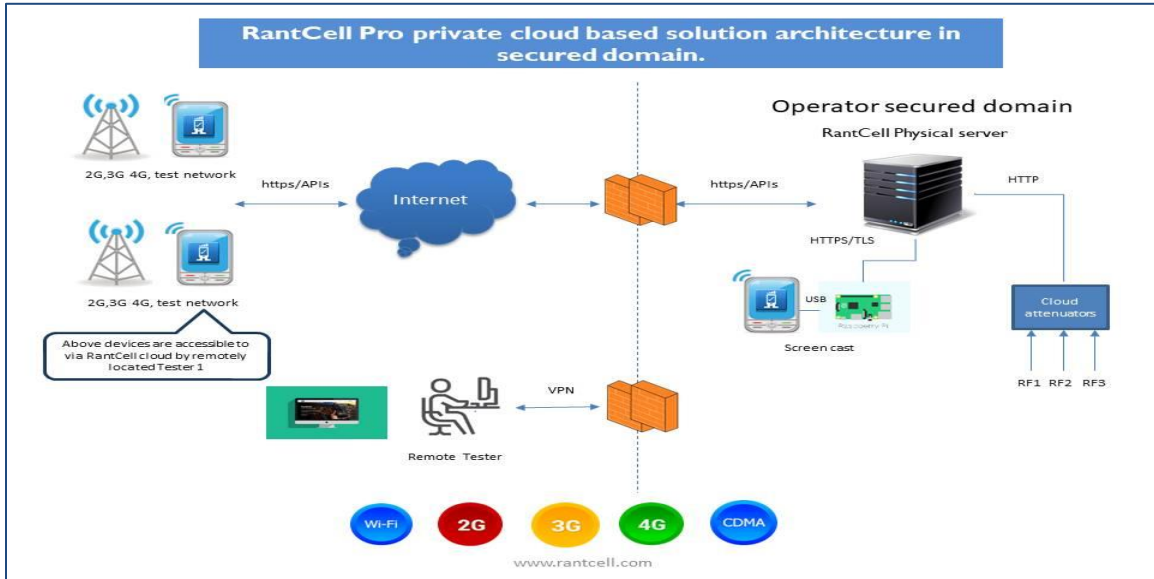
RantCell pro app is cloud based mobile network testing tool integrated with RantCell Enterprise cloud server. A true user experience benchmark tool for mobile operators, mobile network equipment manufacturers, network optimizers, performance analysts, network testers, mobile virtual network operators and field test engineers to measure end user's QoS on 2G, 3G, 4G, CDMA, CDMA EVDO and WI-FI networks. RantCell solution supports real time analysis of test data with interactive powerful web based dashboard with graphs, maps and various other user friendly features.

RantCell solution deployment on Amazon EC2 cloud (Recommended)





RantCell solution architecture when deployed on secure domain ex: Operator datacenter



Server Hardware Specification: (Please note that solution can also be deployed on existing server infrastructure)

	100 license capacity	250 license capacity	1000 license capacity
Brand	DELL	DELL	DELL
Model	R530	R530	R530
Form Factor	2U Rack Server	2U Rack Server	2U Rack Server
Processor	Intel®Xeon®E5-2609v4 (1.7GHz/8C/20MB/85W)	Intel®Xeon®E5-2620v4 (2.1GHz/8C/20MB/85W)	Intel® Xeon® E5-2620v4(2.1 GHz/8C/20MB/85W)
RAM	1X16 GB DDR4	1X16 GB DDR4	2x16 GB DDR4
HDD	1X300GB SAS (6.35cm (2.5) with 8.89cm (3.5) carrier) 10K RPM	1X300GB SAS (6.35cm (2.5) with 8.89cm (3.5) carrier) 10K RPM	2x300GB SAS (6.35cm (2.5) with 8.89cm (3.5) carrier) 10K RPM

OS: Redhat Enterprise Linux 7.0



## 2. [Key Features and Functions of RantCell Enterprise:](#)

RantCell has various features and functions that enable users to test the network and they are detailed below:

### [2.1 Features of RantCell Enterprise App](#)

1. RantCell enterprise app is the QoE measuring software which is normally provided by your admin , if you do not have one please email to [support@rantcell.com](mailto:support@rantcell.com). App can be installed on any Android device which converts smart phone to a measuring terminal. Please refer to section 9 for list of supported devices.
2. RantCell supports for performing repetitive tests such as Ping Test, Speed Test, Call Test, HTTP Test and SMS Test.
3. RantCell supports logging of radio network parameters such as DATA, MCC, MNC, ECI, LAC/TAC, RSSI i.e. Signal Strength, PSC, LCID, eNBID, RSRP, RSRQ, PCI and other radio related parameters.
4. Real Time uploads of test data to cloud server along with GPS information.
5. RantCell supports for remote trigger of tests from dashboard.
6. Scheduling of tests for specific date and time.
7. Unattended continuous period tests as defined by user.
8. Auto switching of RAN technology layer between 2G, 3G and 4G during unattended tests (Useful for SRAN scenarios) - (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information)..
9. Airplane mode toggle ON / OFF (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information).
10. Auto Answer of calls for Call Test
11. Auto reboot device triggers if no network found for more than 5 minutes of time. (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information).
12. Real time alarm notifications for failed tests.
13. Support for remote trigger of reboot device (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information).
14. Support for remote trigger of ON/OFF of mobile data. (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information).
15. Support for remote ON/OFF of Wi-Fi. (Feature available on specific device, please contact [support@rantcell.com](mailto:support@rantcell.com) for further information).
16. Configure concurrent FTP connections for higher bandwidth tests.
17. An app UI to view test results and average measurements.
18. History of the tests on app.
19. Export of data in CSV format and share instantly via email.



## 2.2 Features of RantCell Enterprise Analytics Web Dashboard

1. RantCell dashboard is a unique platform for analysing the test results with interactive maps and graphs.
2. User friendly UI interface to load test data from multiple devices and perform analysis.
3. User management to provision users on enterprise server and license pool allocation.
4. Search Keyword Option: This search options provides the required data associated with input keyword. Apart from this user can also view the entire test data performed with keywords such as registered device/s with additional option to select with date and time.
5. Support for date/time based queries and filters.
6. Create remote group of devices and perform tests remotely.
7. Create continuous unattended periodic test campaigns.
8. Tree structure view for devices and respective test data.
9. Map: This option locates the devices with type of test being performed with test result data, campaigns and performance.
10. Chart: It provides the details of the performance of test conducted with associated devices with graphical presentation like Pie chart, bar chart and table chart.
11. Remote Test: This option enables the user to perform the test remotely with the associated devices with option to edit group, schedule test, Continuous Test, Live Tracking, abort test, change technology, control WI-FI, Airplane mode ON/OFF and restart device.
12. Screen Cast: This option enables the user to connect to the device remotely and control the device for performing desired operations.
13. Tracking: This will enable the user to track the devices associated with the user account.
14. Alarms Panel provides quick analysis of the failed tests associated with support for date/time query.
15. Settings: An option to customize threshold settings to control colour coding representation on maps and graphs.
16. Remote device controller for switching ON/OFF of mobile data, airplane mode ON/OFF, Wi-Fi ON/OFF and remote reboot ON are currently supported, but on selected devices only.

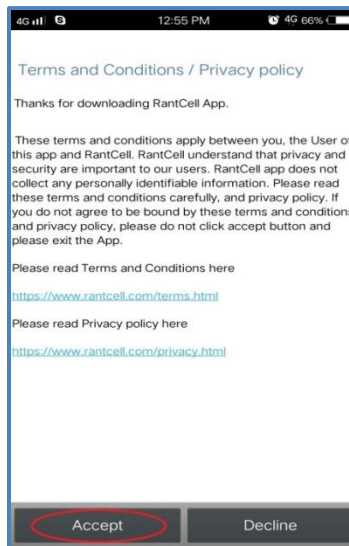
### 3. Installation and User Setup Process of RantCell Enterprise App

1. Basic Installation Requirement.
  - Android Based Smartphone
  - Android Operating system version greater than 5.0 (Lollipop Version)
2. Download and Installation process of RantCell Enterprise

Step 01 – RantCell Enterprise APK file will be provided by support team for download

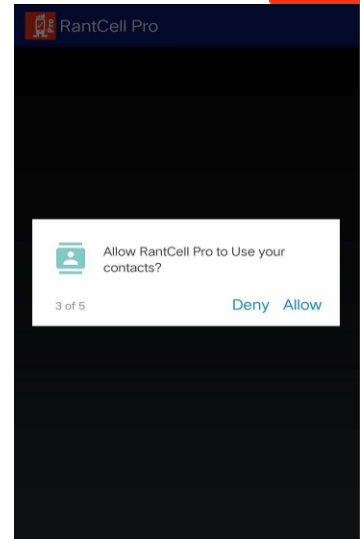
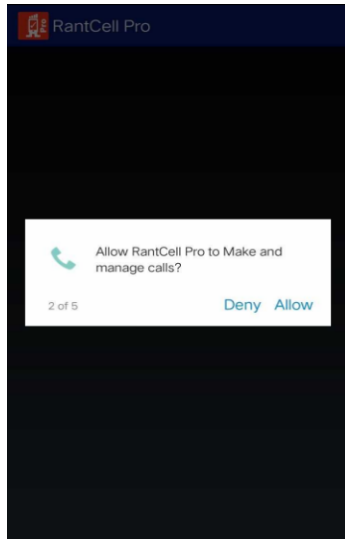
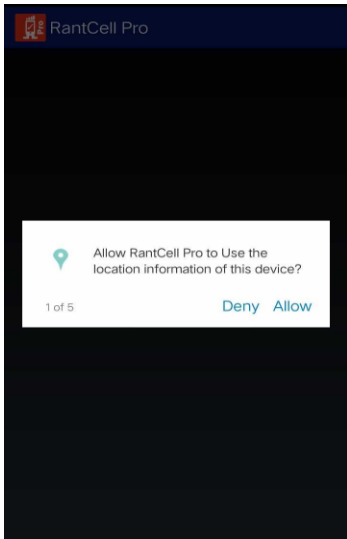
Step 02 – If you do not have enterprise account with RantCell please contact your administrator for username and password.

Step 03 – Post installation of RantCell Enterprise App user has to accept “Terms and Conditions / Privacy Policy”. App will prompt for further permission grants as stated below, please select “Yes” for all effective functioning of RantCell Enterprise App



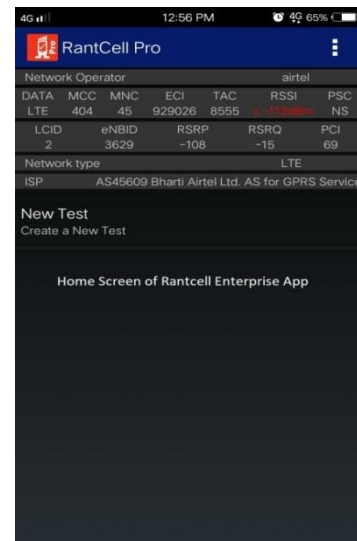
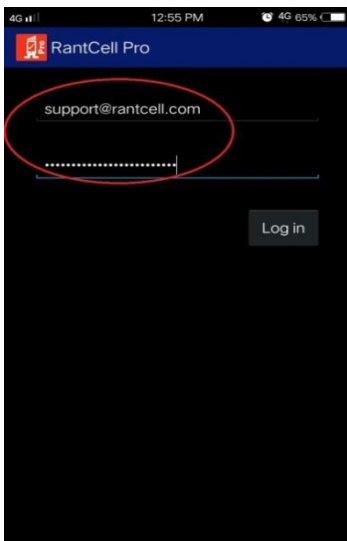
While launching Rantcell Enterprise App, it prompts to grant some permissions in marshmallow and above versions such as below (Please grant all the permissions as stated below). For more information refer to images below.

1. Location information.
2. Make and manage phone calls.
3. Use your contacts.
4. Access to photos, media contents and files on your device.
5. Send and view SMS messages.



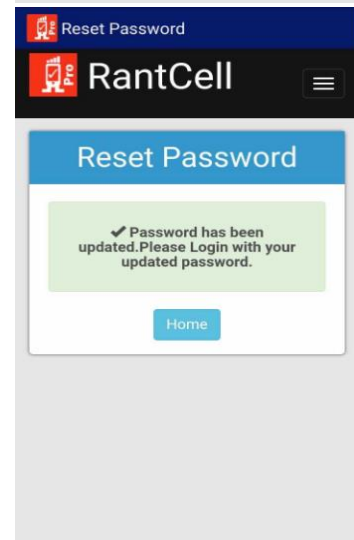
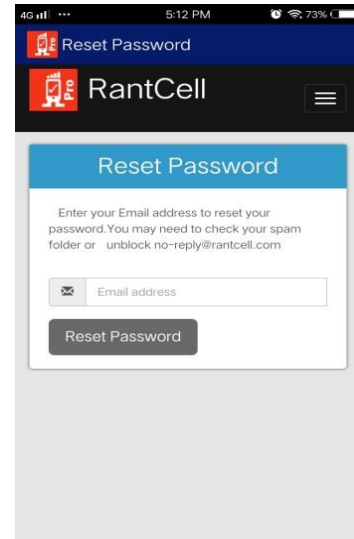
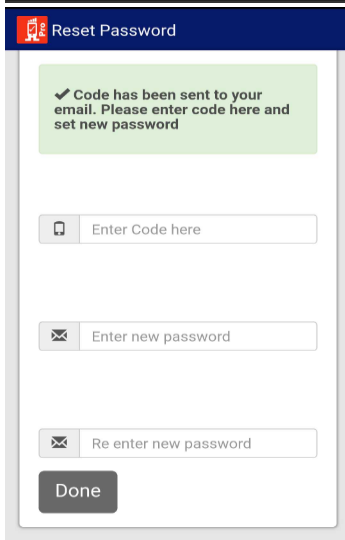
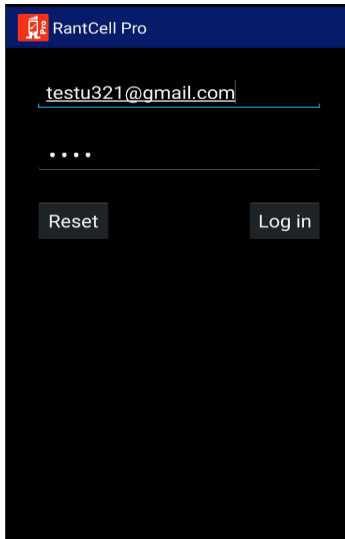
Note: If registration is failing on multiple attempts please contact [support@rantcell.com](mailto:support@rantcell.com).

Step 04- If you have already received credentials from admin, user has to login to RantCell Enterprise App as mentioned below



## Password Reset

If user wants to reset password then click on reset password option appearing in login screen of app which will prompt user to enter registered email id and code will be sent to registered email id which will be valid for 30 minutes. Then user has to enter code and new password twice to reset as shown in image below.



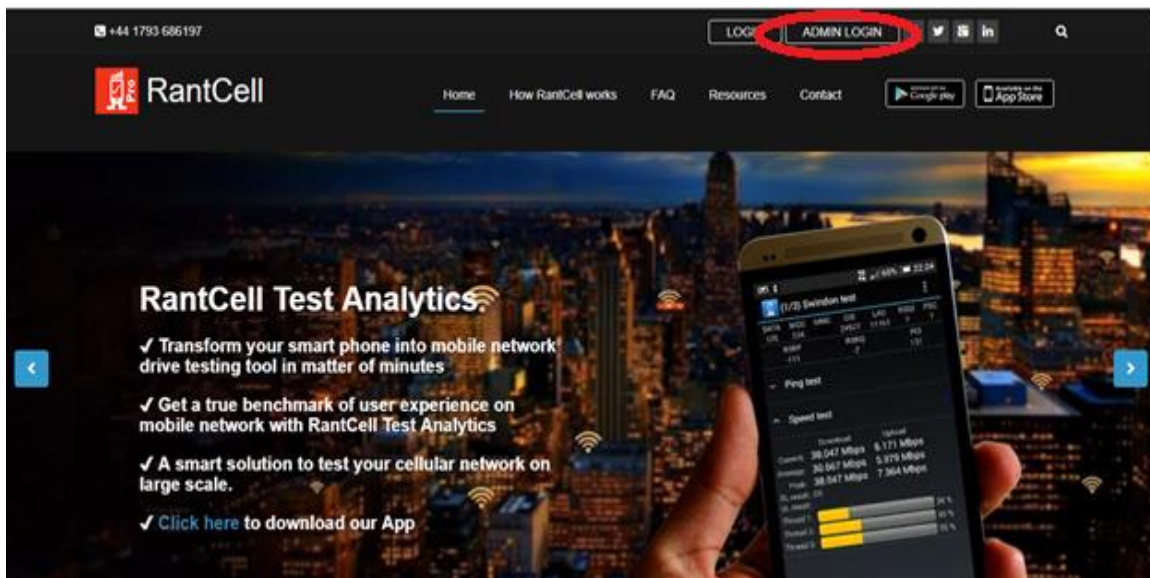
## [4. Admin User Management and Provisioning Sub-User Accounts](#)

Feature of Admin Account:

1. Admin login for enterprise will be provided by RantCell Support Team, if user does not have credentials please contact [support@rantcell.com](mailto:support@rantcell.com).
2. Admin can provision RantCell sub users for organization and manage license pool.
3. Admin shall be able to view test data of all users.
4. Admin can register his own devices for testing as long as licenses are allocated.

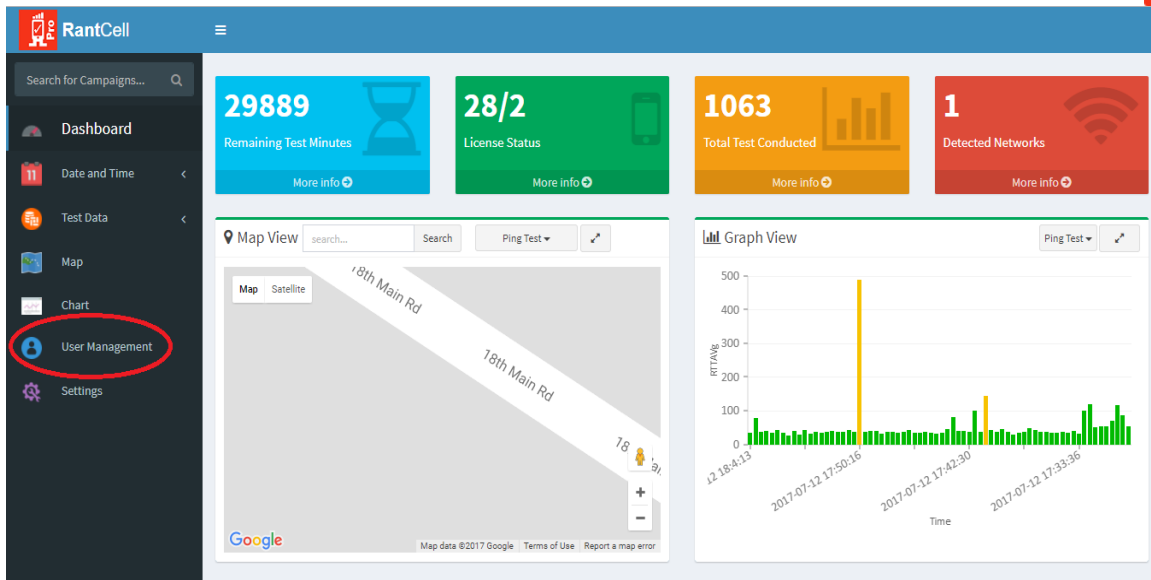
Steps to provision sub User from Admin Account:

Step 01 – Admin has to click on “ADMIN LOGIN” on landing page of RantCell Enterprise URL For Example: {Company Name}.rantcell.com. Post that login into Admin RantCell Account.

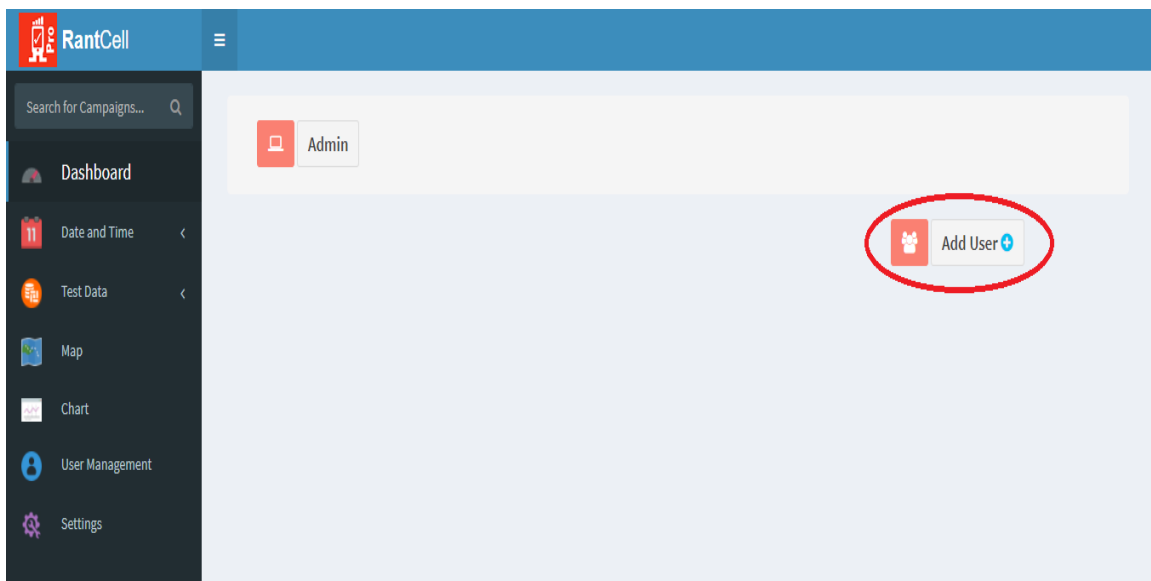


Step 02 – Click on User management as shown below





Step 03 – Click on Add user and enter required mandatory fields including the number of licenses allocation. For more information please refer images below:

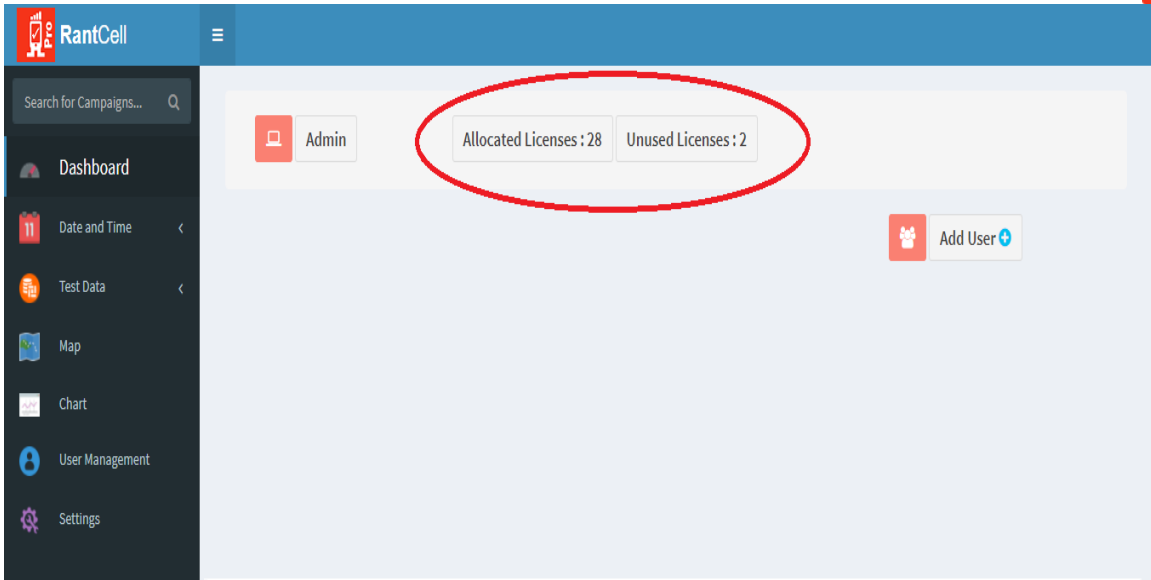


### Add User

<b>First Name *</b>	<input type="text" value="Enter First Name"/>
<b>Last Name *</b>	<input type="text" value="Enter Last Name"/>
<b>Email *</b>	<input type="text" value="enter e-mail address"/>
<b>No of License *</b>	<input type="text" value="enter no of license to allocate"/>
<b>Password *</b>	<input type="password" value="Enter password"/>
<b>Confirm Password *</b>	<input type="password" value="Confirm password"/>
<b>Country *</b>	<input type="text" value="Select your country"/>
<b>Company *</b>	<input type="text" value="Enter company name"/>
<b>Address</b>	<input type="text" value="Address"/>
<b>PostCode/Pincode *</b>	<input type="text" value="Enter pin code"/>
<b>Mobile</b>	<input type="text" value="Enter mobile number"/>

\* Required

Step 04 – Post license allocation to user/s admin can view license pool of used licenses and unused licenses as shown in the image below.



The screenshot shows the RantCell Admin dashboard. The top navigation bar is blue with the RantCell logo on the left and a menu icon. Below the navigation bar is a search bar for campaigns. The main content area features a light blue background with a white box containing the text "Admin" and "Allocated Licenses : 28 Unused Licenses : 2". A red circle highlights this information. To the right of this box is an "Add User" button with a plus icon. The left sidebar is dark blue and contains a search bar and several menu items: Dashboard, Date and Time, Test Data, Map, Chart, User Management, and Settings.



## 5. [Configuring and Executing New Tests on RantCell Enterprise App](#)

1. User can create new test by selecting “New Test / Create a New Test” as shown below in the image to run various tests individually or in combination of multiple tests at a time.
2. The tests which user can configure are Ping Test, Speed Test, Call Test, HTTP Test, All Test and Repeat Test. Following sections explain how each test can be configured.

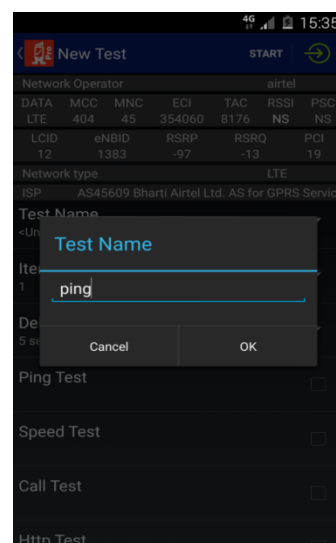
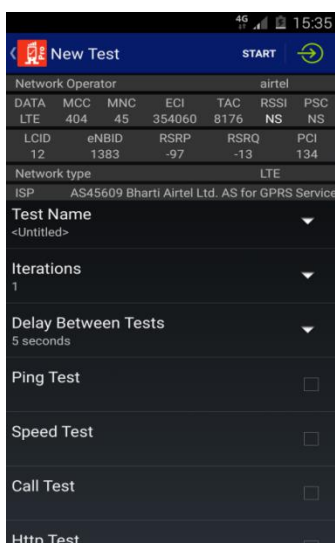
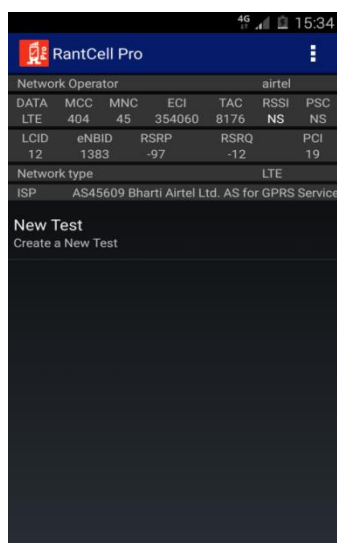
### [5.1 Ping Test](#)

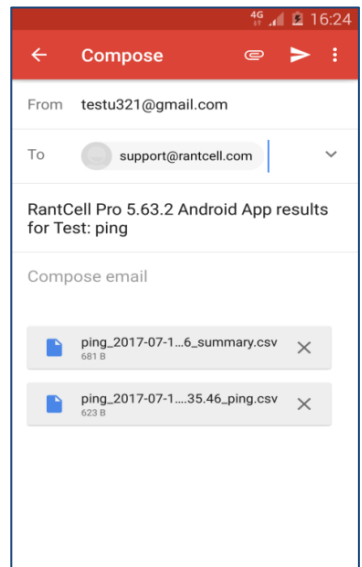
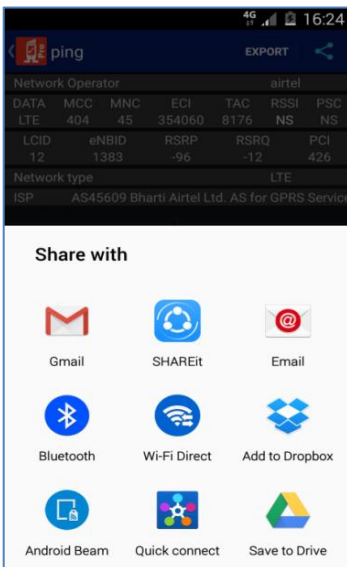
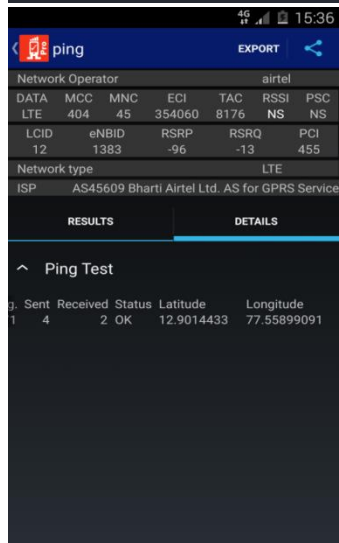
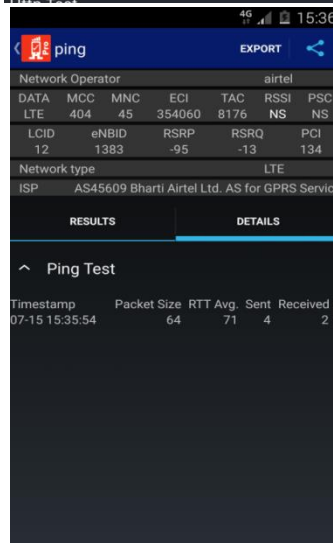
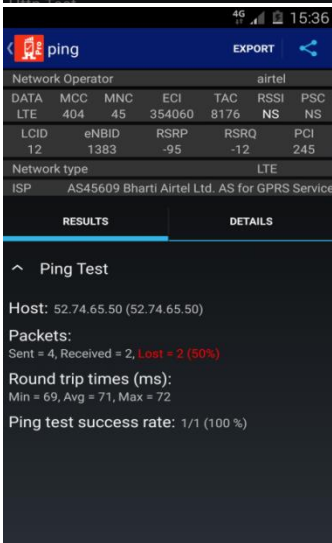
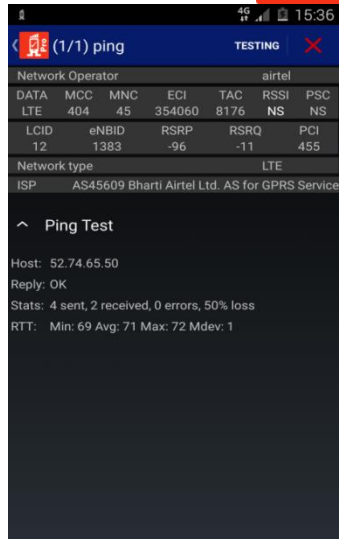
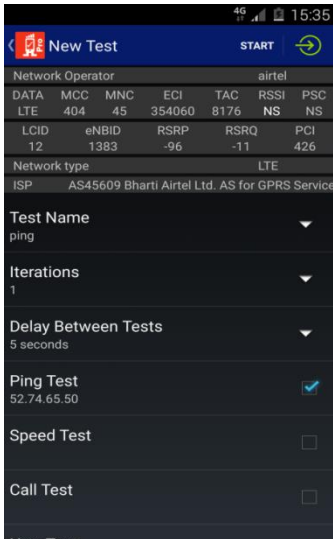
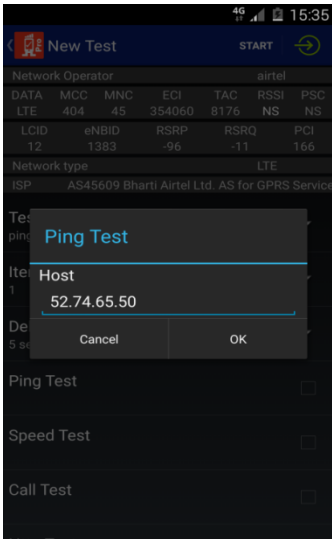
Ping Test measures latency in ms (millisecond) for a packet of data on 2G, 3G, 4G, CDMA and Wi-Fi Networks.

How to configure Ping Tests and View Results:

- Step 01: Select New Test and enter test name, number of iterations (Number of test cycles) and “Delay Between tests”, user can change it according to the requirement.
- Step 02: Configure Ping Test by changing the host IP address if needed.
- Step 03: Select the Start test and turn on GPS if app prompts , this is required for maps based post analysis or real time view via tracking.(Please ensure that Location settings under Android is set to “GPS only” or “Device Only”).
- Step 04: Check the test results and its details.

User can share results from RantCell Enterprise App through “Export as CSV option” via Email, if needed after test being completed. By logging to RantCell dashboard user can analyze the test results in many different views. Through dashboard user can also analyze and compare with competitors network by performing different tests.







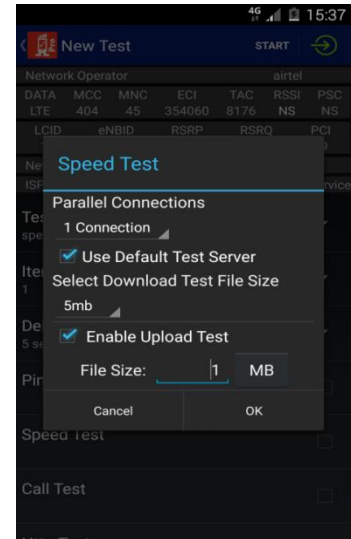
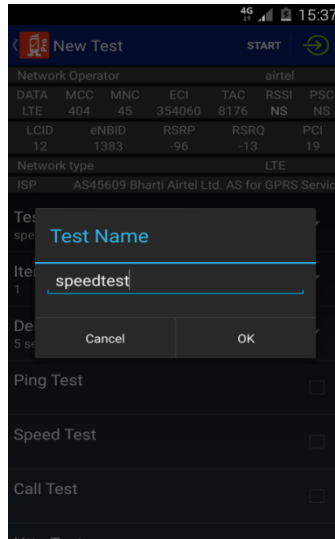
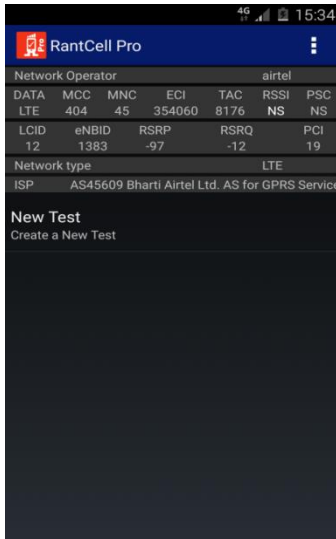
## 5.2 Speed Test

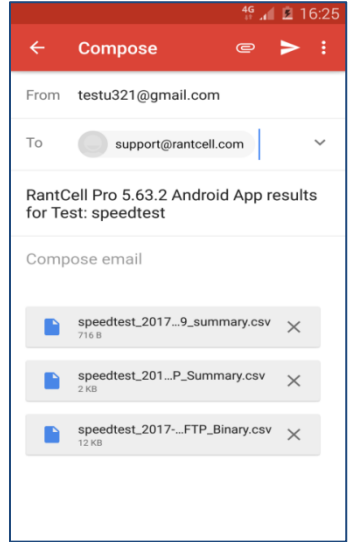
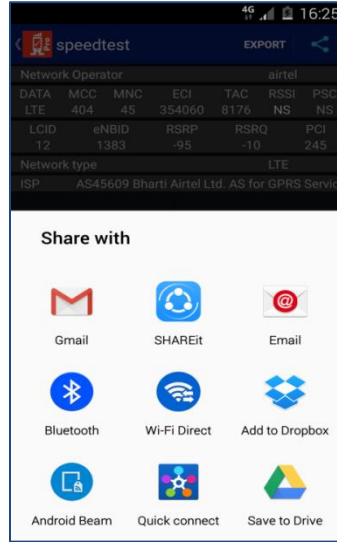
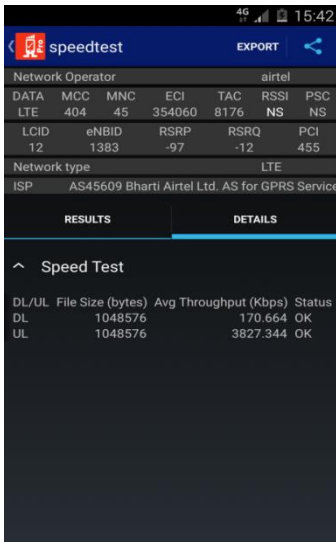
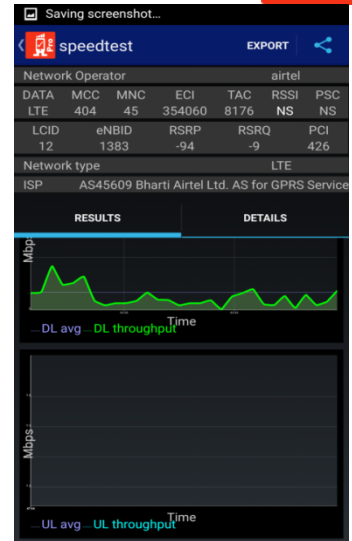
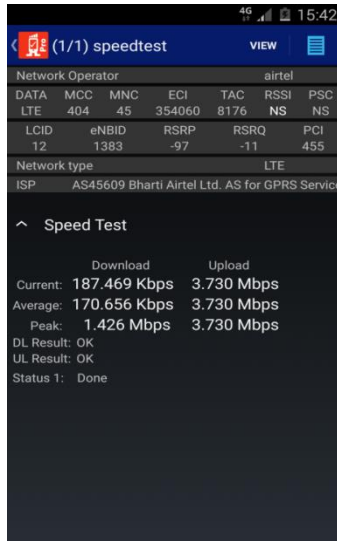
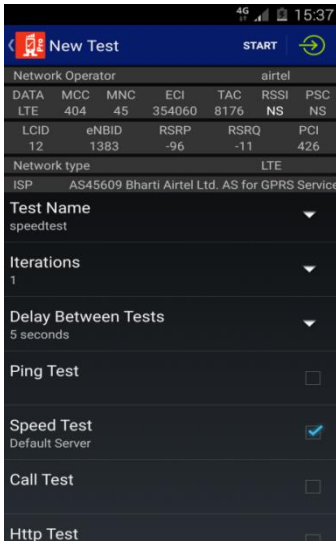
Speed Test measures network upload speed and download speed in mbps (Megabits Per Second).

How to Configure Speed Test and View Results:

- Step 01: Select New Test and enter test name, Iterations (Number of test cycles) and delay between tests, user can change it according to the requirement. Speed Test measures network upload and download connections speed in mbps.
- Step 02: Configure Speed test by changing number of parallel connections, enter your own FTP server if needed, alter download file size and upload file size as per the requirement which is set to 1mb by default followed by 5mb, 10mb, 15mb and 20mb maximum.
- Step 03: Select the Start test and turn on GPS turn if app prompts , this is required for maps based post analysis or real time view via tracking.(Please ensure that Location settings under Android is set to “GPS only” or “Device Only”).
- Step 04: Check the test results and its details.

User can share results from RantCell Enterprise App through “Export as CSV option” via Email, if needed after test being completed. By logging to RantCell dashboard user can analyze the test results in many different views. Through dashboard user can also analyze and compare with competitors network by performing different tests.





### 5.3 Call Test

Call Test measures the call setup time, dropped calls and call success rate.

How to configure Call Tests and View Results:

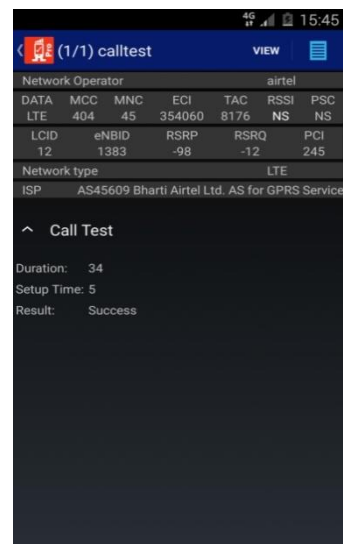
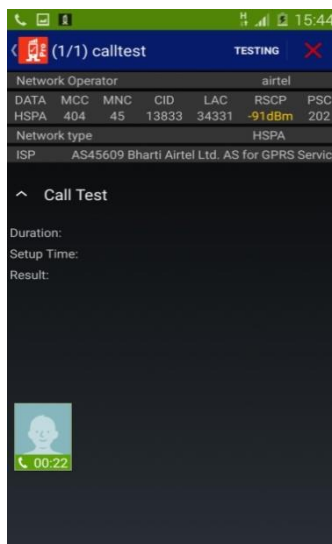
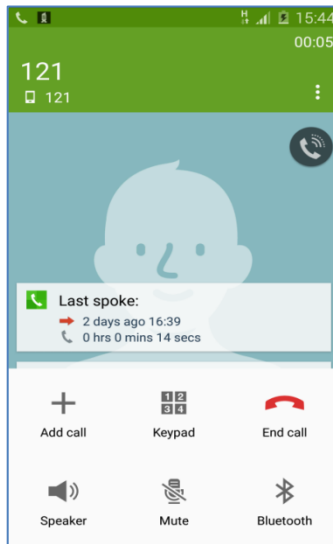
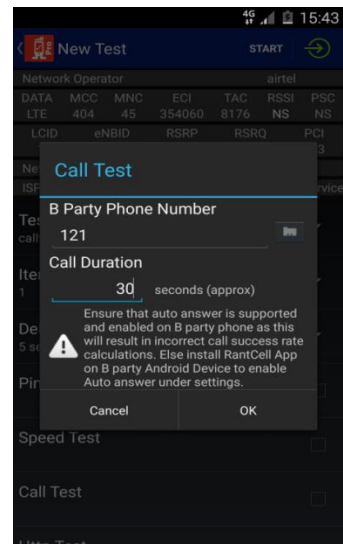
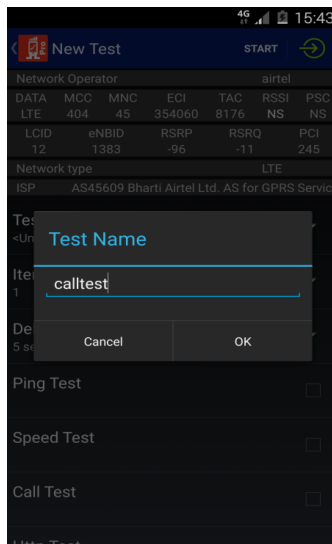
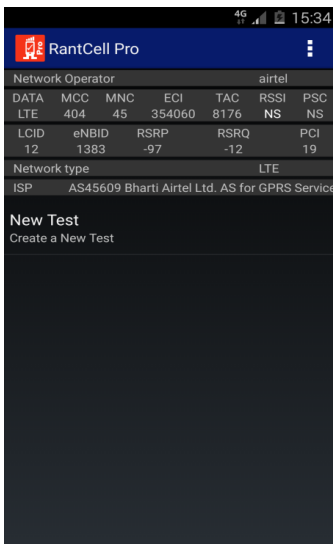
- Step 01: Select New Test and enter test name, iterations (number of test cycles) and delay between tests. User can change the requirement accordingly.
- Step 02: Configure Call Test by entering B Party contact number and call duration time required to perform the test.
- Step 03: Select start test and turn on GPS if app prompts, this is required for maps based post analysis or real time view via tracking (Please ensure that location settings under Android is set to "GPS" or "Device" only).



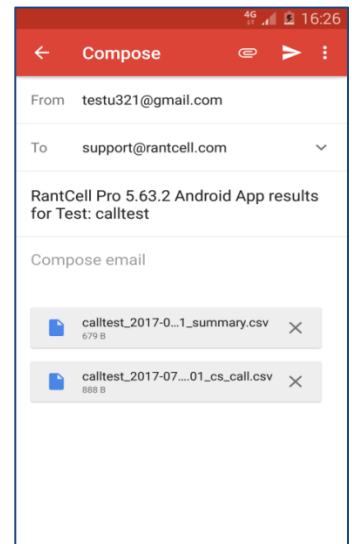
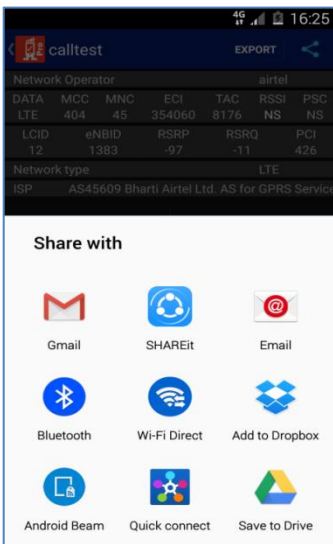
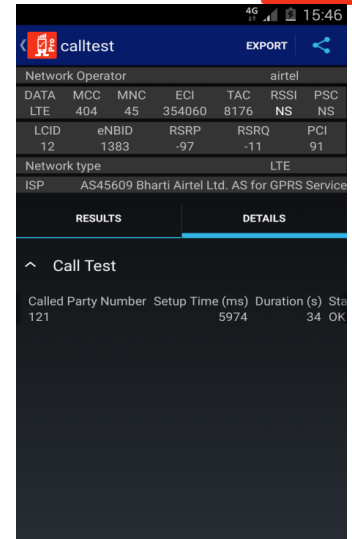
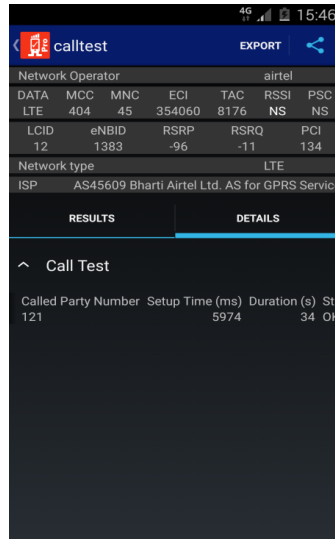
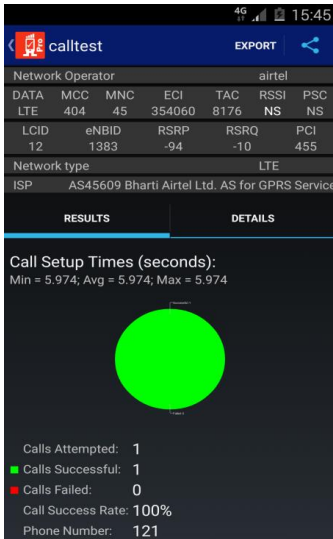
**Step 04:** Check test results and its details

User can share results from RantCell Enterprise App through “Export as CSV option” via Email, if needed after test being completed. By logging to RantCell dashboard user can analyze the test results in many different views. Through dashboard user can also analyze and compare with competitors network by performing different tests.

Note: To get accurate call test results for calculation, the B party need to enable auto answer call option through device or should have installed RantCell Enterprise App and enabled auto answer call option under settings menu.







## 5.4 HTTP Test

HTTP Test measures average values and peak values of internet speed in HTTP protocol by downloading files from web pages URL link.

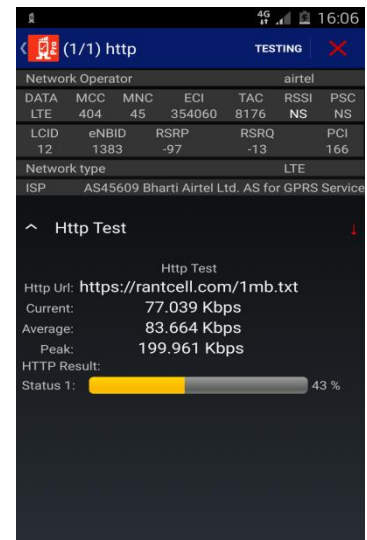
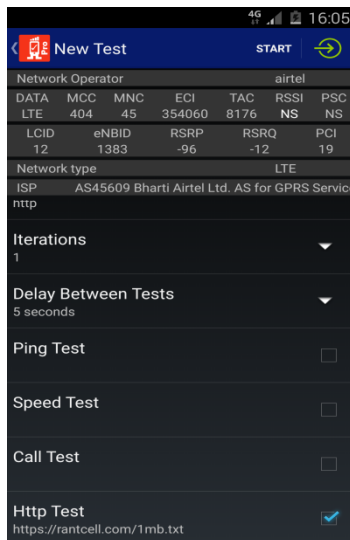
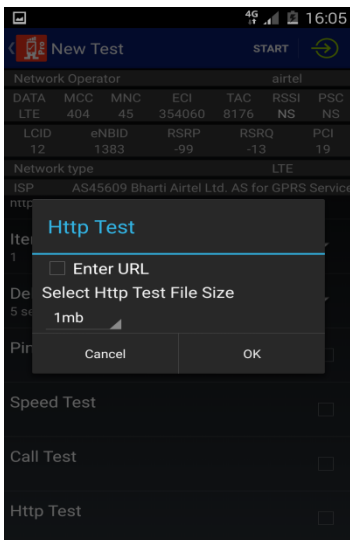
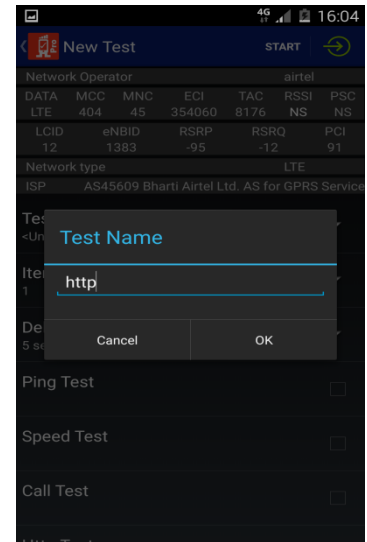
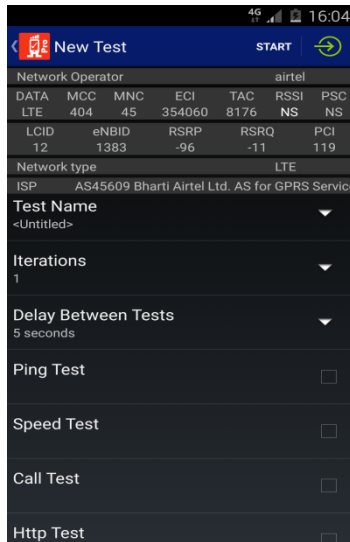
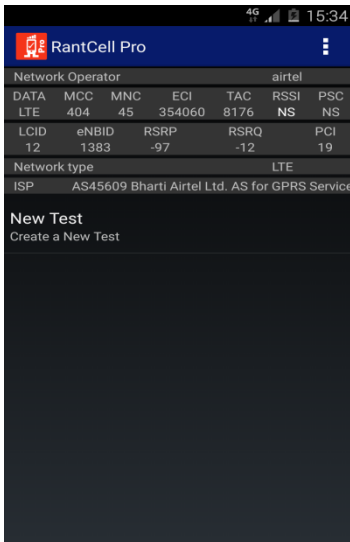
How to configure HTTP Test and view results:

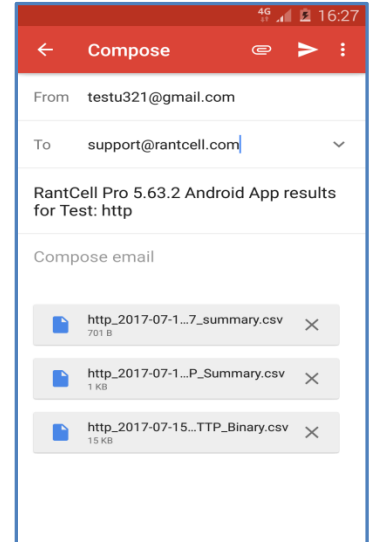
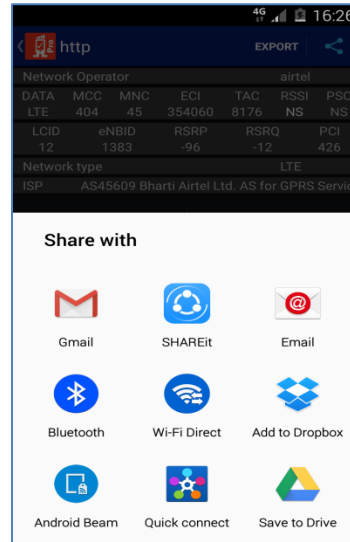
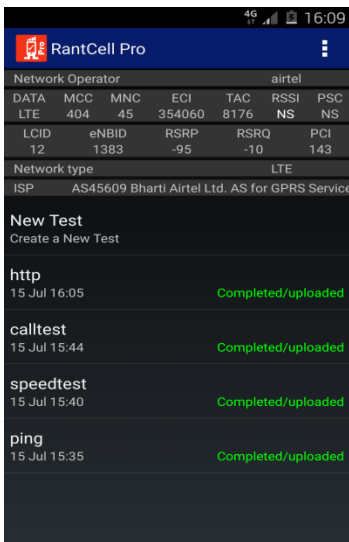
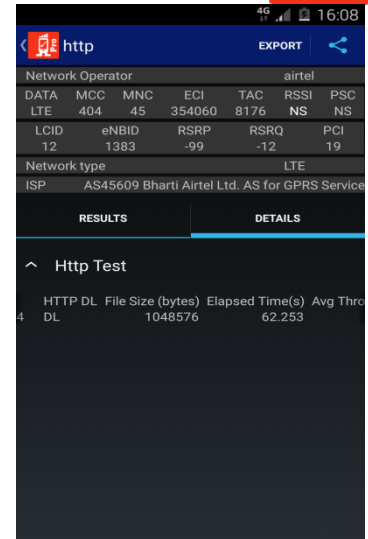
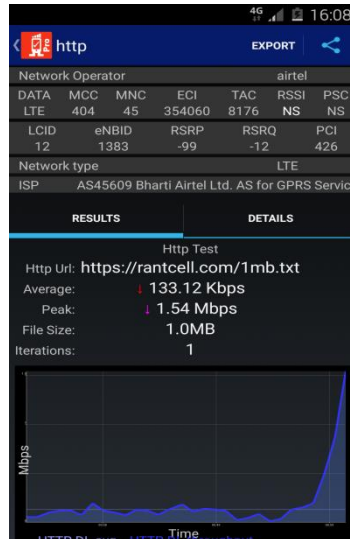
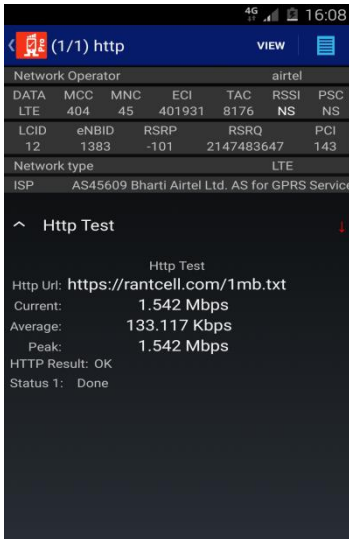
- Step 01: Select New Test and enter test name, iterations (number of test cycles) and delay between tests, user can change it accordingly to requirement.
- Step 02: Configure HTTP Test by changing download file size and entering the URL from source where file needs to be downloaded.
- Step 03: Select start test and turn on GPS if app prompts, this is required for maps based post analysis or real time via tracking (Please ensure that location settings under Android is set to "GPS" or "Device" only).



Step 04: Verify test results and its details.

User can share results from RantCell Enterprise App through “Export as CSV option” via Email, if needed after test being completed. By logging to RantCell dashboard user can analyze the test results in many different views. Through dashboard user can also analyze and compare with competitors network by performing different tests.



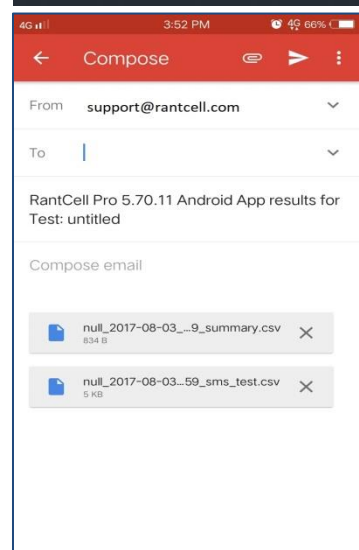
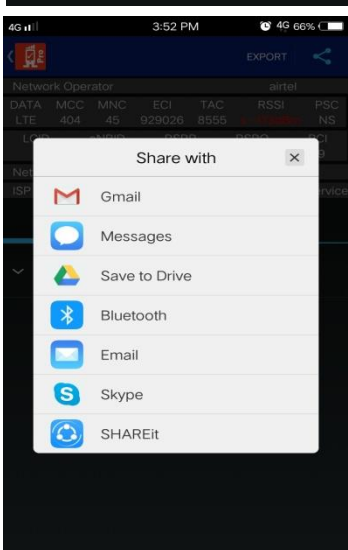
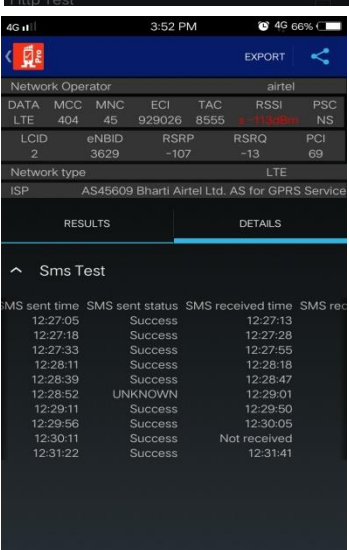
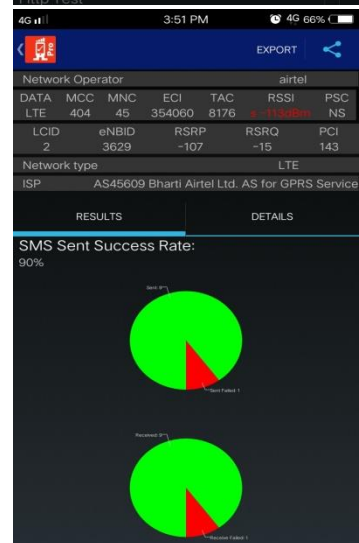
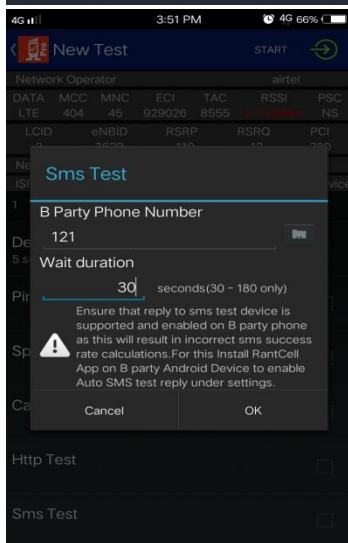
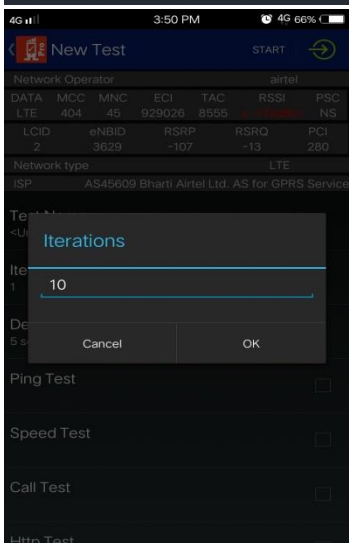
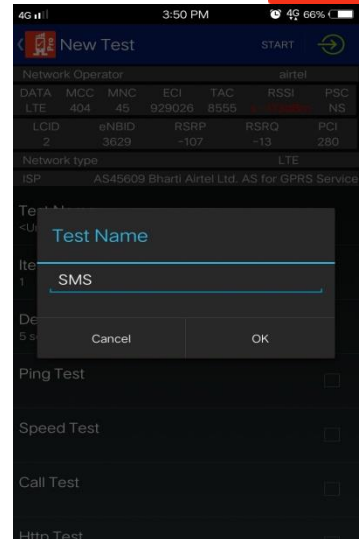
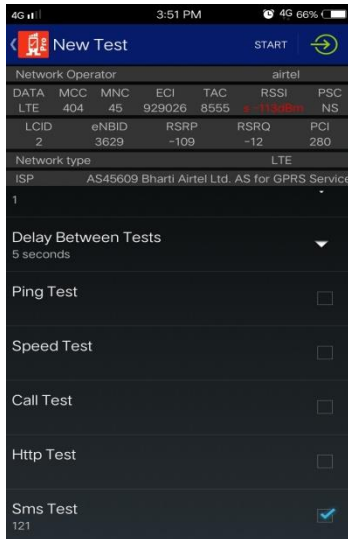
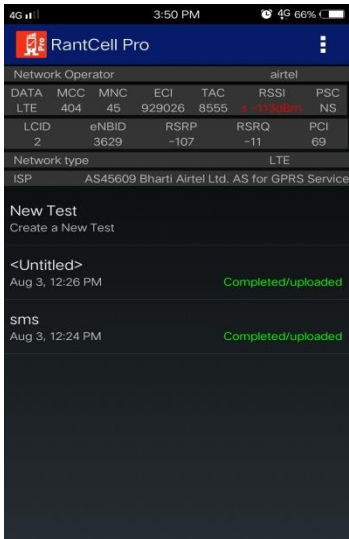


## 5.5 SMS Test:

SMS test measures your send/receive success rate and SMS sent/receive failures.

How to configure SMS test and view results:

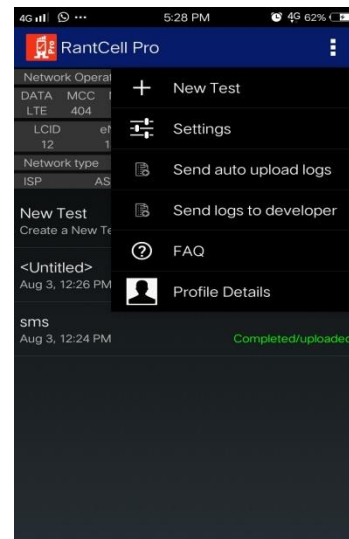
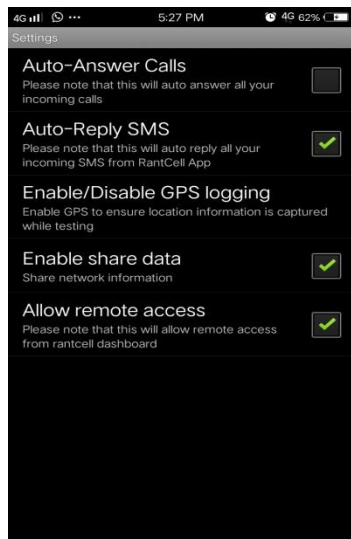
- Step 01: Select new test and enter test name, iterations (number of test cycles) and delay between tests, user can change it according to your requirement.
- Step 02: Configure SMS test by entering your B-Party number and SMS wait duration time.
- Step 03: Select start test and turn on GPS to log location of test.
- Step 04: Check the test results and its details





Note:

1. In order to obtain accurate SMS test results for calculation B-party needs install latest RantCell Pro app and enable Auto reply SMS option under settings as shown in image below.



2. Make sure your GSM/CDMA connection is working fine to deliver your SMS to its recipient.
3. Then user can login to RantCell website and analyze the test results in many views. Can also do more tests and analyze with competitor network.

## 5.6 All Test

Using RantCell Enterprise App user can perform Ping Test, Speed Test, HTTP Test and Call Test simultaneously.

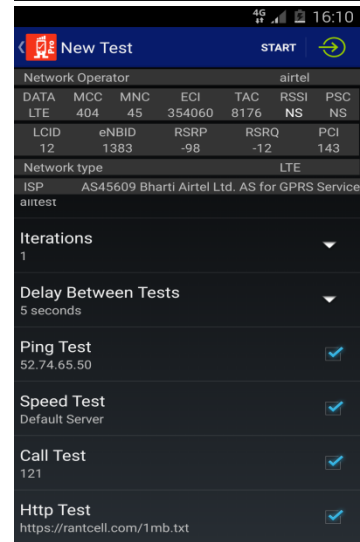
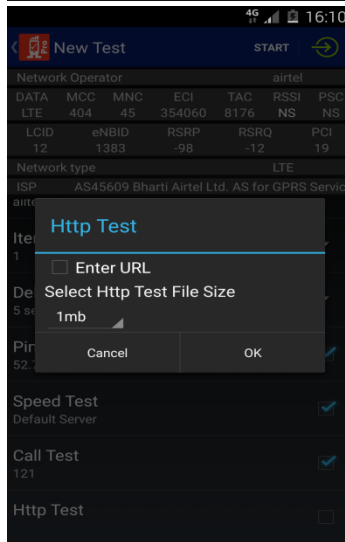
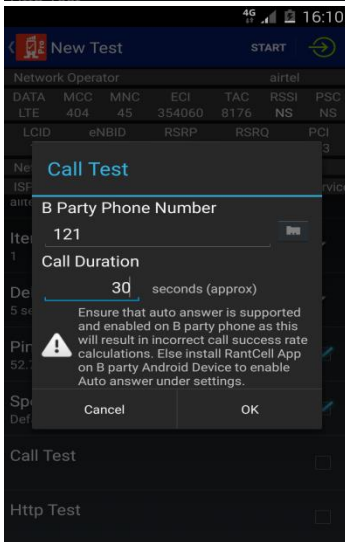
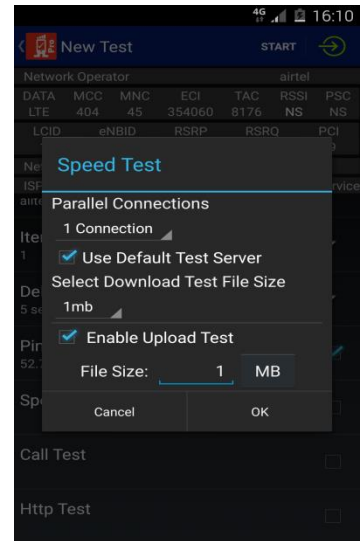
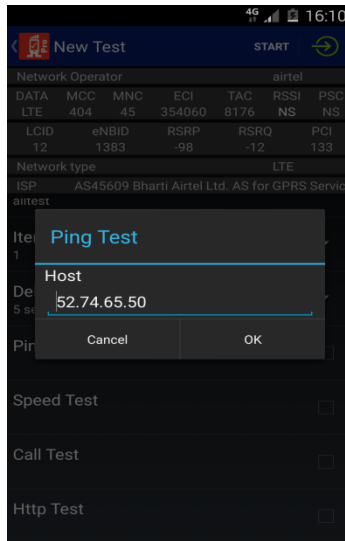
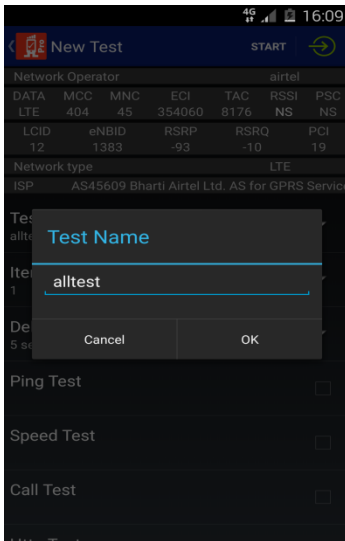
How to configure All Tests and View Results:

- Step 01: Select New Test and enter test name, iterations (number of test cycles) and delay between tests.
- Step 02: Configure Ping Test where user can change host IP address if needed,
- Step 03: Configure Speed Test by changing number of parallel connections and options to enter your own FTP server if needed.
- Step 04: Configure Call Test by entering “B” party contact number and call duration time limit.
- Step 05: Configure HTTP Test by selecting download file size and user has option to enter URL if needed.
- Step 06: Select start test and turn on GPS if app prompts, this is required for maps based post analysis or real time via tracking (Please ensure that location settings under Android is set to “GPS” or “Device” only).
- Step 07: Check test results and its details.

User can share results from RantCell Enterprise App through “Export as CSV option” via Email, if needed after test being completed. By logging to RantCell dashboard user can analyze the test results



in many different views. Through dashboard user can also analyze and compare with competitors network by performing different tests.





Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-97	-12	91

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**^ Ping Test**

Host: 52.74.65.50  
Reply: RTT: 83 ms; TTL: 53 ms  
Stats: 4 sent, 3 received, 0 errors, 25% loss  
RTT: Min: 69 Avg: 79 Max: 85 Mdev: 7

**^ Speed Test**

	Download	Upload
Current:	0.000 Kbps	0.000 Kbps
Average:	0.000 Kbps	0.000 Kbps
Peak:	0.000 Kbps	0.000 Kbps

DL Result:  
UL Result:  
Status 1:

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-96	-12	19

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**^ Ping Test**

Host: 52.74.65.50  
Reply: OK  
Stats: 4 sent, 4 received, 0 errors, 0% loss  
RTT: Min: 66 Avg: 76 Max: 94 Mdev: 10

**^ Speed Test**

	Download	Upload
Current:	372.711 Kbps	0.000 Kbps
Average:	506.984 Kbps	0.000 Kbps
Peak:	940.141 Kbps	0.000 Kbps

DL Result:  
UL Result:  
Status 1:

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-96	-12	143

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

Status 1: Done

**^ Call Test**

Duration: 34  
Setup Time: 5  
Result: Success

**^ Http Test**

Http Test  
Http Url: https://rantcell.com/1mb.txt  
Current: 76.883 Kbps  
Average: 68.883 Kbps  
Peak: 164.102 Kbps  
HTTP Result:  
Status 1:

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-99	-15	166

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

Status 1: Done

**^ Call Test**

Duration: 35  
Setup Time: 5  
Result: Success

**^ Http Test**

Http Test  
Http Url: https://rantcell.com/1mb.txt  
Current: 86.836 Kbps  
Average: 57.836 Kbps  
Peak: 253.633 Kbps  
HTTP Result:  
Status 1:

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-98	-12	426

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**^ Ping Test**

Host: 52.74.65.50  
Reply: OK  
Stats: 4 sent, 4 received, 0 errors, 0% loss  
RTT: Min: 66 Avg: 76 Max: 94 Mdev: 10

**^ Speed Test**

	Download	Upload
Current:	484.727 Kbps	3.734 Mbps
Average:	409.898 Kbps	3.734 Mbps
Peak:	940.141 Kbps	3.734 Mbps

DL Result: OK  
UL Result: OK  
Status 1: Done

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-94	-10	426

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** | **DETAILS**

**^ Ping Test**

**^ Speed Test**

**^ Call Test**

**^ Http Test**

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-95	-10	426

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** | **DETAILS**

**^ Ping Test**

Host: 52.74.65.50 (52.74.65.50)  
Packets:  
Sent = 4, Received = 4, Lost = 0 (0%)  
Round trip times (ms):  
Min = 66, Avg = 76, Max = 94  
Ping test success rate: 1/1 (100%)

**^ Speed Test**

**^ Call Test**

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-94	-10	426

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** | **DETAILS**

	Download	Upload
Average:	409.96 Kbps	3.74 Mbps
Peak:	942.97 Kbps	3.74 Mbps

File Size: 1.0MB 1.0MB  
Iterations: 1 1  
Server: 52.74.65.50

Network Operator: airtel

DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS

LCID	eNBID	RSRP	RSRQ	PCI
12	1383	-94	-9	426

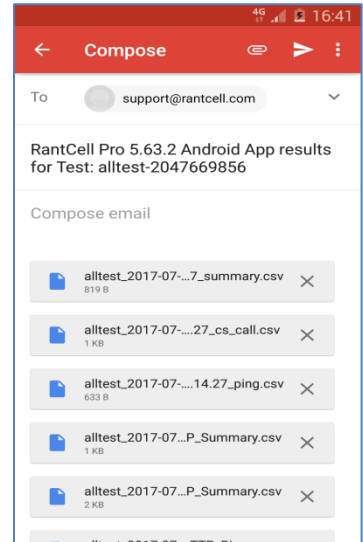
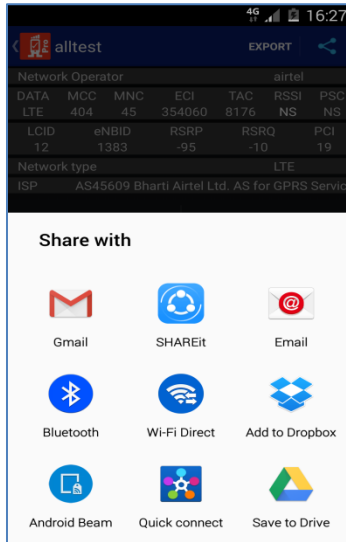
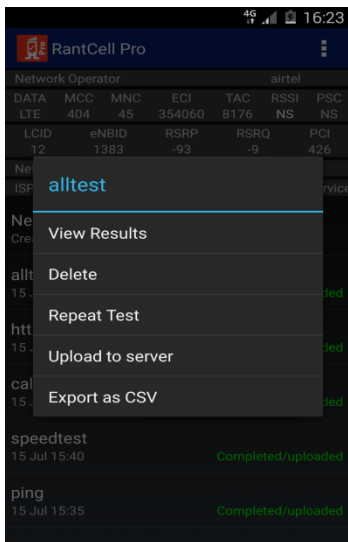
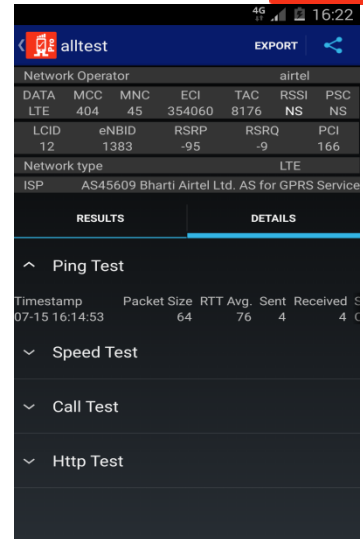
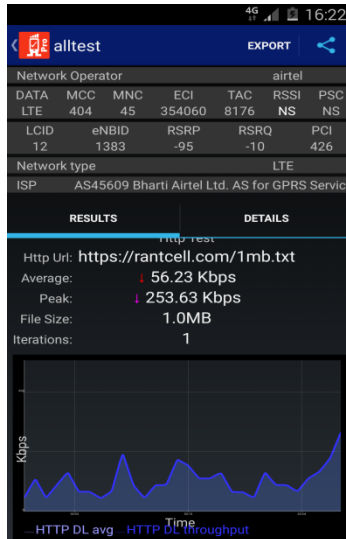
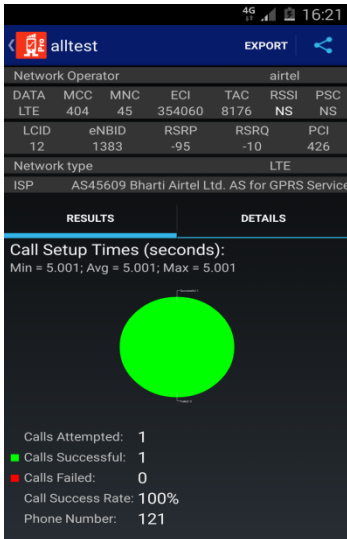
Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** | **DETAILS**

**^ Call Test**

**^ Http Test**





## 5.7 Repeat Test

Repeat Test allows users to run any historical tests without having to enter the test configuration like FTP user name, file size and few other information.

How to perform Repeat Test and view results:

- Step 01: Press and hold any test that has been performed already in past until the menu pops-up.
- Step 02: In pop-up menu select Repeat Test to run same test which can be a single test or combination of more than one test and select start.





**RantCell Pro**

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-95	-10	143		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**New Test**  
Create a New Test

- http 15 Jul 16:05 Completed/uploaded
- calltest 15 Jul 15:44 Completed/uploaded
- speedtest 15 Jul 15:40 Completed/uploaded
- ping 15 Jul 15:35 Completed/uploaded

**RantCell Pro**

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-93	-9	426		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

http

- View Results
- Delete
- Repeat Test
- Upload to server
- Export as CSV

**New Test** START

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-96	-12	19		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

Iterations: 1

Delay Between Tests: 5 seconds

Ping Test:

Speed Test:

Call Test:

Http Test:   
https://rantcell.com/1mb.txt

**(1/1) http** TESTING

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-97	-13	166		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**Http Test**

Http Test  
Http Uri: https://rantcell.com/1mb.txt  
Current: 77.039 Kbps  
Average: 83.664 Kbps  
Peak: 199.961 Kbps  
HTTP Result:   
Status 1:  43 %

**(1/1) http** VIEW

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	401931	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-101	2147483647	143		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**Http Test**

Http Test  
Http Uri: https://rantcell.com/1mb.txt  
Current: 1.542 Mbps  
Average: 133.117 Kbps  
Peak: 1.542 Mbps  
HTTP Result: OK  
Status 1: Done

**http** EXPORT

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-99	-12	426		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** **DETAILS**

Http Test  
Http Uri: https://rantcell.com/1mb.txt  
Average: 133.12 Kbps  
Peak: 1.54 Mbps  
File Size: 1.0 MB  
Iterations: 1

**http** EXPORT

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-99	-12	19		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**RESULTS** **DETAILS**

**Http Test**

HTTP DL	File Size (bytes)	Elapsed Time(s)	Avg Thr
4	1048576	62.253	

**http** EXPORT

Network Operator	airtel					
DATA	MCC	MNC	ECI	TAC	RSSI	PSC
LTE	404	45	354060	8176	NS	NS
LCID	eNBID	RSRP	RSRQ	PCI		
12	1383	-96	-12	426		

Network type: LTE  
ISP: AS45609 Bharti Airtel Ltd. AS for GPRS Service

**Share with**

- Gmail
- SHAREit
- Email
- Bluetooth
- Wi-Fi Direct
- Add to Dropbox
- Android Beam
- Quick connect
- Save to Drive

**Compose**

From: testu321@gmail.com

To: support@rantcell.com

RantCell Pro 5.63.2 Android App results for Test: http

Compose email

- http\_2017-07-1...7\_summary.csv 701 B
- http\_2017-07-1...P\_Summary.csv 1 KB
- http\_2017-07-15...TTP\_Binary.csv 15 KB

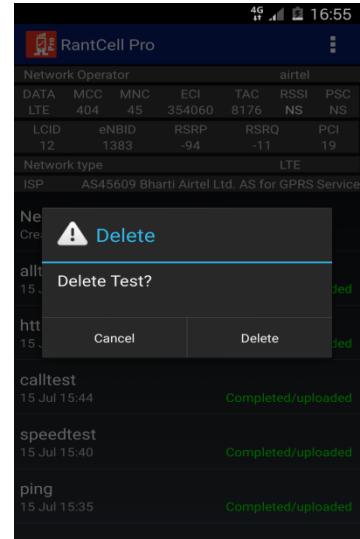
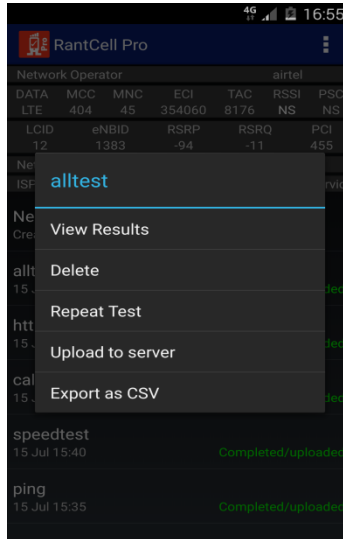
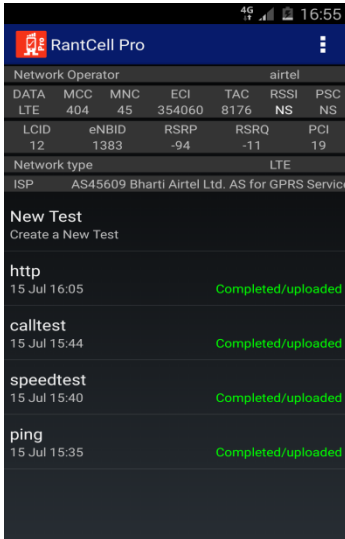


## 5.8 Delete Test

Delete Test allows user to delete test which is executed and completed in status.

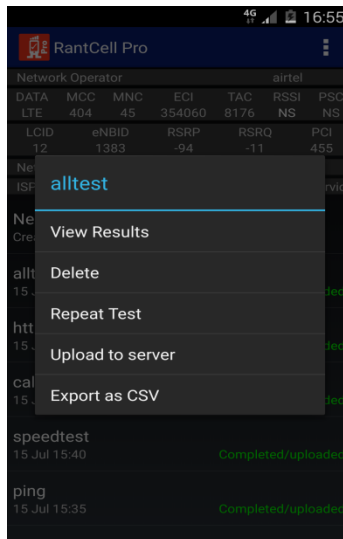
How to perform Delete Test:

- Step 01: Press, hold any test which has been performed and completed already until the menu pops up.
- Step 02: In the pop up menu select delete test.



## 5.9 Upload to Server:

This option allows user to upload test results to server if test has not been uploaded to the server automatically.



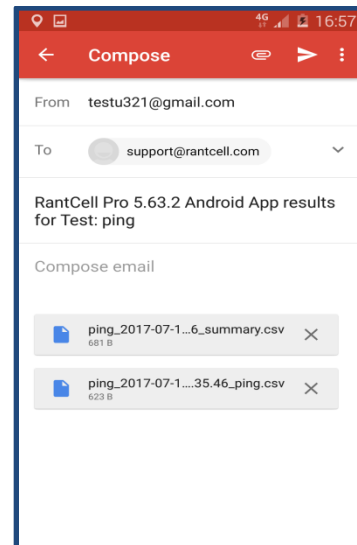
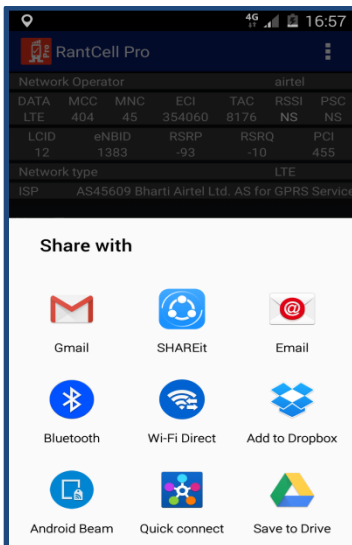
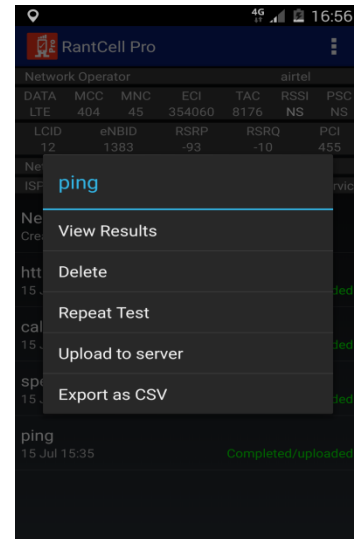
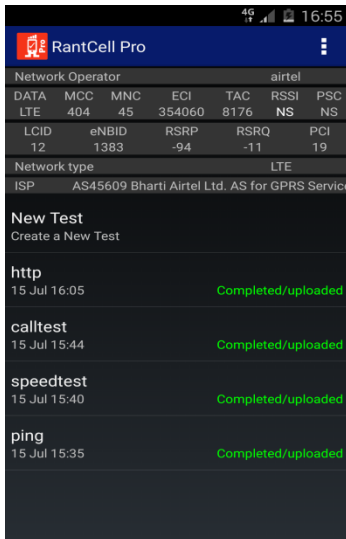


## 5.10 Export as CSV Format

This option enables user to export the test results into CSV format and share the results with desired email recipients.

### How to Export Test Results

- Step 01: Press and hold any test that has been performed already until menu pops-up.
- Step 02: In the pop-up menu select option Export as CSV and then select required means to share the results in CSV format for analysis.





Ping\_2017-07-18\_17.42.44\_ping [Read-Only] - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Timestamp	Iteration	Host	Packet size	RTT min	RTT avg	RTT max	RTT mdev	Status	PSC	Latitude	Longitude	networkO	networkOperatorName	networkType	networkDe	Lac/Tac
2	2017-07-18T17:42:50.410+0530	1	52.74.65.5	64	51	62	69	7	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
3	2017-07-18T17:42:59.179+0530	2	52.74.65.5	64	43	57	63	8	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
4	2017-07-18T17:43:07.850+0530	3	52.74.65.5	64	42	64	94	19	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
5	2017-07-18T17:43:16.567+0530	4	52.74.65.5	64	45	59	65	8	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
6	2017-07-18T17:43:25.739+0530	5	52.74.65.5	64	44	45	46	0	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
7	2017-07-18T17:43:34.375+0530	6	52.74.65.5	64	52	61	69	7	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
8	2017-07-18T17:43:43.087+0530	7	52.74.65.5	64	51	63	71	7	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
9	2017-07-18T17:43:51.835+0530	8	52.74.65.5	64	52	122	314	111	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
10	2017-07-18T17:44:00.551+0530	9	52.74.65.5	64	48	60	68	7	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	
11	2017-07-18T17:44:09.213+0530	10	52.74.65.5	64	45	50	62	6	OK	?	12.90306; 77.55642	40486	Vodafone IN	UNKNOWN	WIFI	21302	



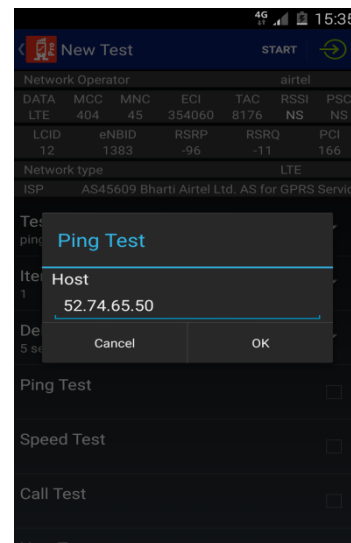
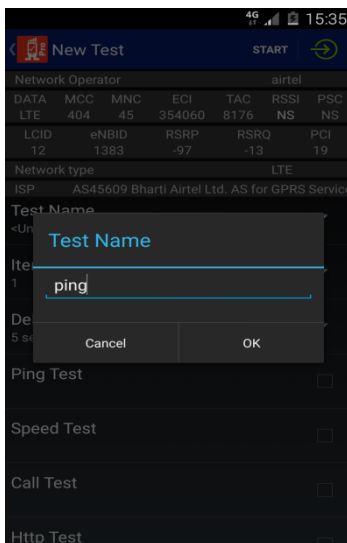
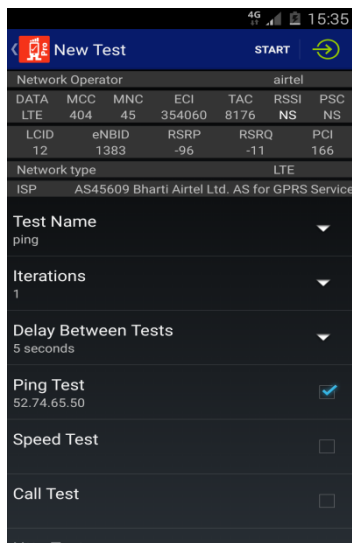
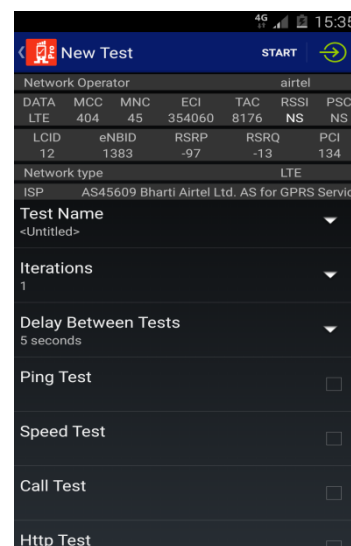
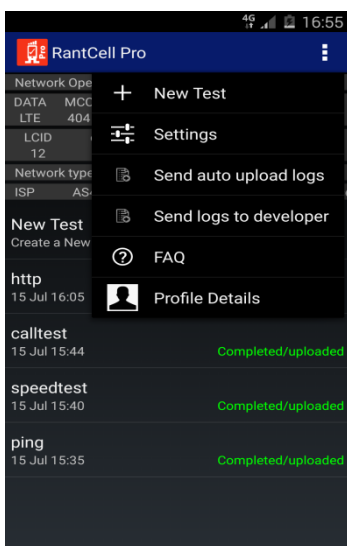
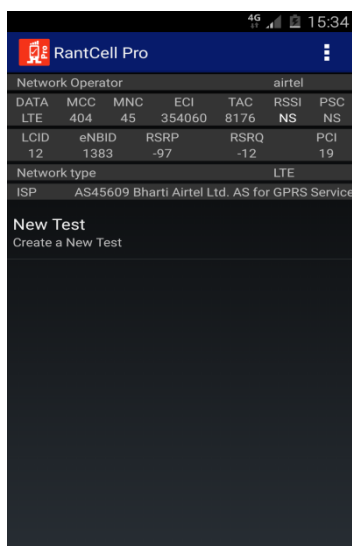
## 6. [RantCell Enterprise App Menu](#)

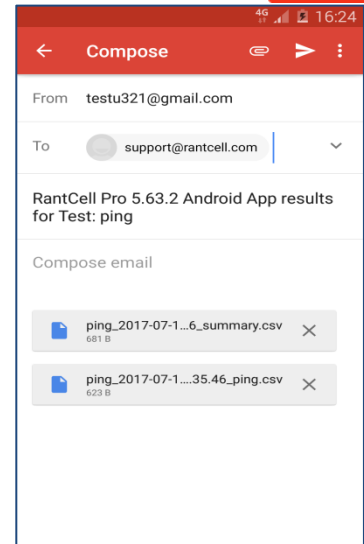
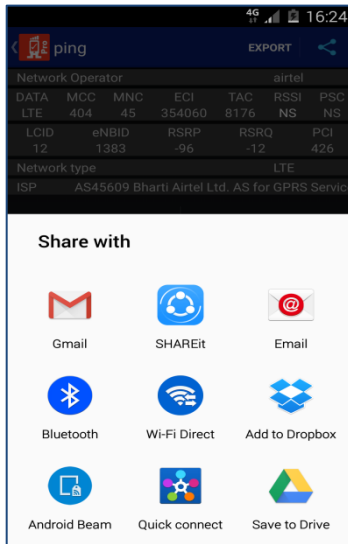
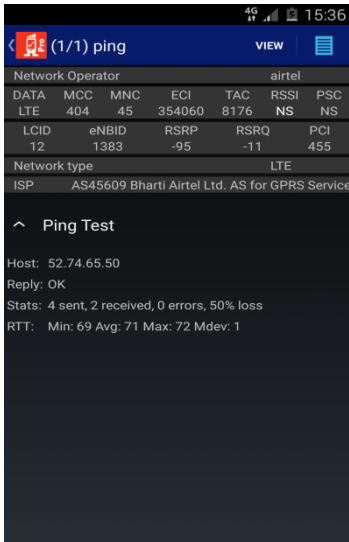
### [6.1 New Test](#)

There is also an additional option start a new test as shown below.

#### How to use New Test on App Menu:

- Step 01: Tap on App Menu available on right top of the screen and select New Test
- Step 02: Select type of test or combination of test needs to be performed. Refer to the articles about Ping Test, Speed Test, Call Test and All Test to find detailed description to run tests.



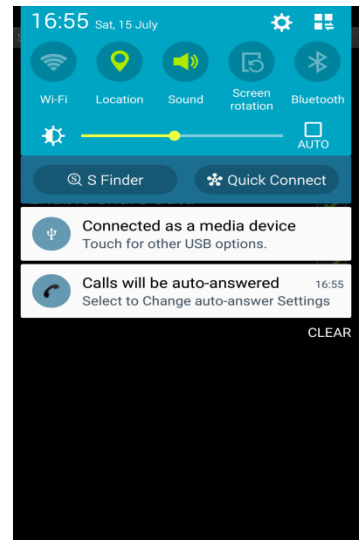
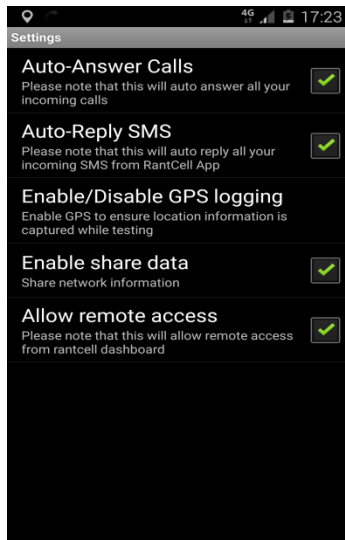
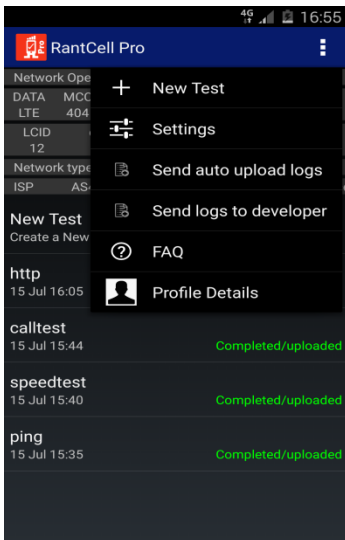


## 6.2 Settings

In settings menu there are various options available, they have been listed below for reference with feature description.

### Auto Answer Calls:

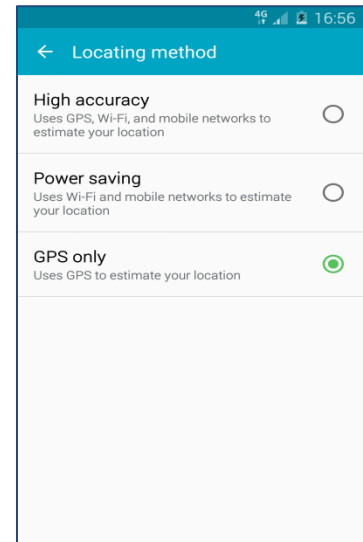
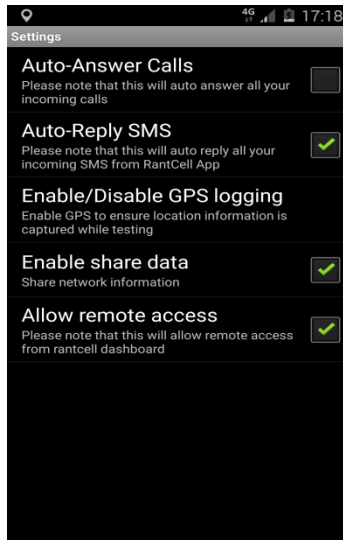
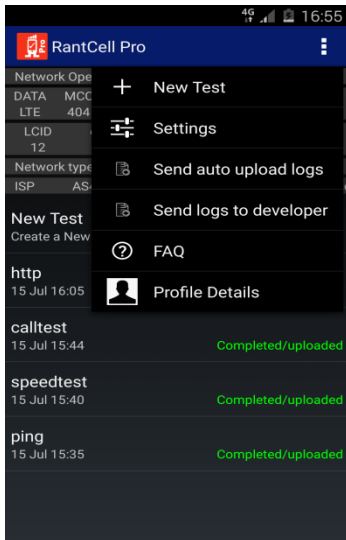
Auto Answer Calls is a feature when enabled automatically answers any incoming call. This feature is used when performing mobile to mobile call testing where in B-Party can answer the repeated call attempts by A-Party.





### Enable / Disable GPS Logging:

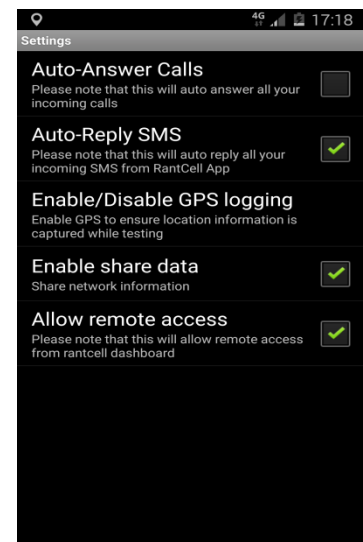
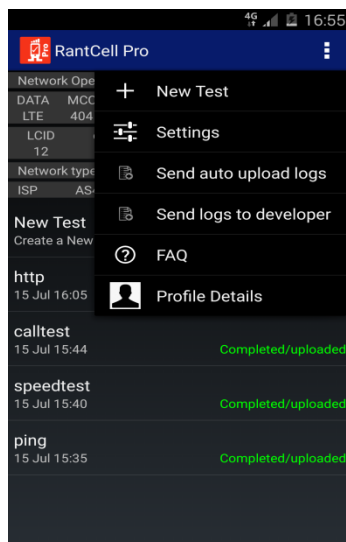
1. Enable GPS is used to capture the current location of device while testing RantCell Enterprise application. For example: While performing drive testing the location GPS location needs to be logged for plotting map data of test.
2. It's recommended to select "GPS only" for accurate drive test results under Android settings (Settings -> Location -> ON and "Device only" or "GPS only")



### Enable Share Data:

When option is set to disable, app does not upload any test data to RantCell Enterprise Cloud Server.

*Note: If Enable Share data is disabled no data will get transmitted from the user device to RantCell Cloud Server and thus no data would be available for RantCell Dashboard for analysis.*

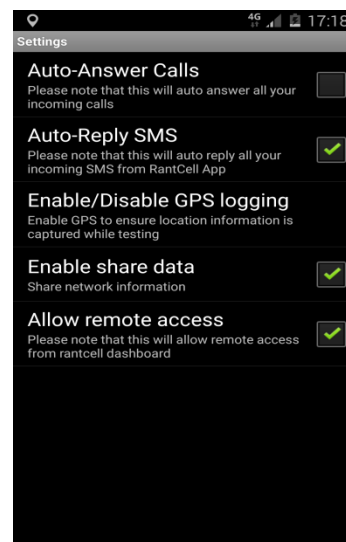
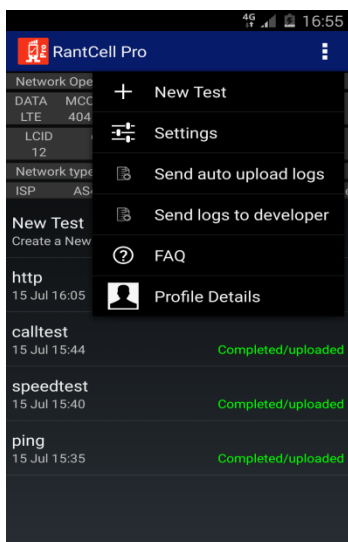




### Allow Remote Access:

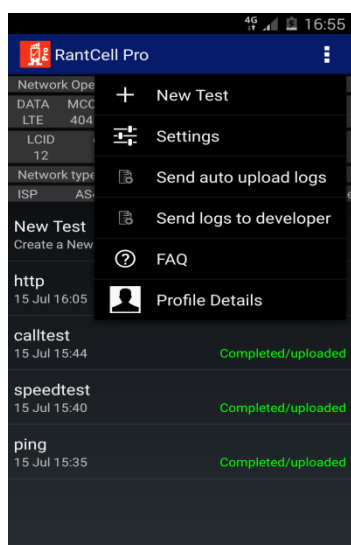
Enabling Remote Access allows user to perform remote test from RantCell Enterprise Dashboard.

*Note: If Allow Remote Access is disabled then user will not be able to perform any Remote Test from RantCell Enterprise Dashboard for this specific device.*



### 6.3 Send Auto Upload Logs

This feature supports continuous recording of RantCell enterprise App activities such as auto reboot, no network, manual remote reboot triggers, Auto upload of test logs for those which had failed due to connectivity issues. From this option user can send auto upload logs to required recipients.



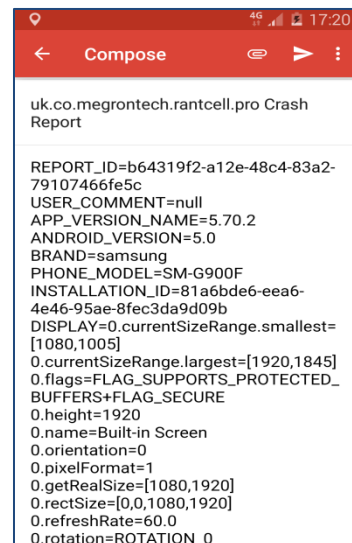
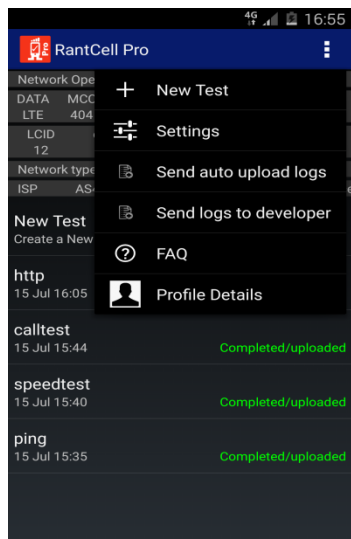
```
Logged at19:24:23
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at19:29:23
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at19:36:11
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at19:41:12
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at19:48:19
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at19:53:19
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at19:59:39
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at20:4:39
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at20:10:59
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at20:16:0
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at20:23:7
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at20:28:7
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at20:35:23
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
Logged at20:40:23
Test is not running and network is not available!Timer expired auto reboot triggered.And Rssi value is = ? Rsrq value is =?
Rsrp value is = ?
Logged at20:47:42
Test is not running and network is unavailable,Starting function for reboot if network not available after 5 minutes.And Rssi
value is = ? Rsrq value is =?Rsrp value is = ?
```





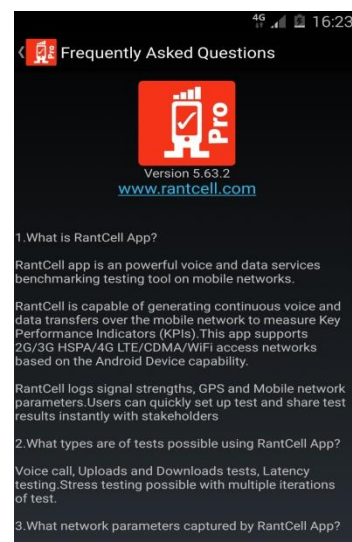
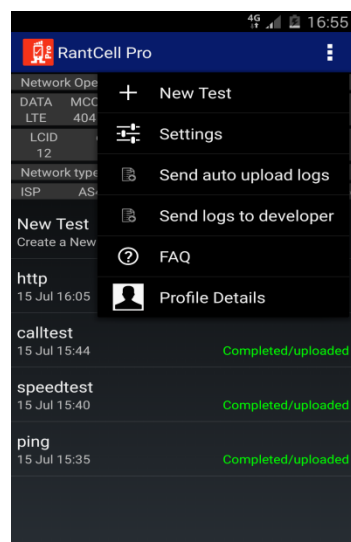
## 6.4 Send Logs to Developer

User can send logs to developer which enables user to send trace logs to trouble shoot issue faced by users while using RantCell Enterprise App. All test logs are sent to [support@rantcell.com](mailto:support@rantcell.com) (RantCell Support Team). This is for support purpose to trouble shot and fix issues.



## 6.5 FAQ

FAQ means Frequently Asked Questions is made available on menu for users to know basic details about RantCell Enterprise app including app version and other generically asked questions.



## 6.6 Profile Details

Shows user ID and device IMEI ID displayed.



## 7. [RantCell Enterprise Web Dashboard](#)

RantCell Enterprise Web Dashboard provides users to access test results data enriched with various graphs, tables and map views, which can be used for further analysis. Using RantCell Enterprise Web Dashboard users can track the tests being performed on real time basis and features like Remote Test which enables a Field Service Engineers to perform tests.

### User system requirement and bandwidth requirement:

1. System Requirement: i3 Pentium Chip Set Processor (Equivalent or higher) , 4GB RAM, 128 HDD, DDR SD3 RAM, Integrated Graphics Co-processor.
2. Bandwidth Requirement: Minimum 5mbps for better performance RantCell Enterprise Web Dashboard.
3. Android Device with operating system version greater than 5.0 to support RantCell Enterprise App.

### Supporting browser:

1. Google Chrome Browser (Recommended).
2. Safari (Mac).
3. Mozilla Firefox.
4. Internet Explorer.

### [7.1 Login to RantCell Enterprise Web Dashboard](#)

Step 01: Enter URL <http://www.rantcell.com> or (CompanyName).rantcell.com (If Enterprise Server is provisioned)

Step 02: User has to enter valid User ID and password to access RantCell Enterprise Web Dashboard. In case of Enterprise customer user has to contact admin for credentials.

The screenshot shows the login interface of the RantCell Enterprise Web Dashboard. The header includes the RantCell logo and navigation links. The main content area features a login form with fields for email/username and password, a 'Remember me' checkbox, and a 'login' button.



## 7.2 Test Analytics Web Dashboard

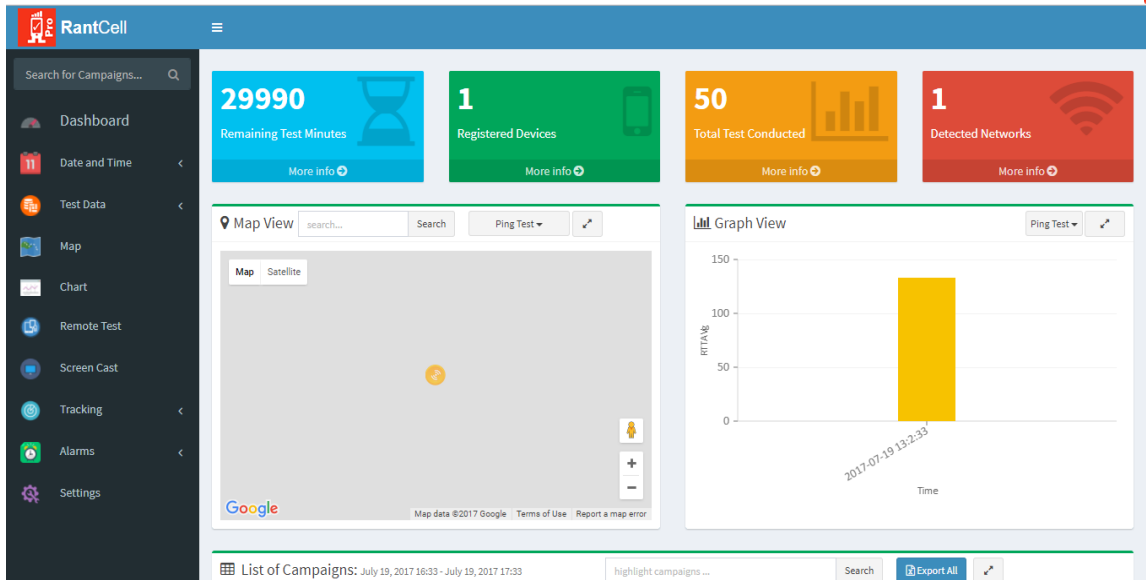
Below are few prominent features of RantCell Enterprise Web Dashboard.

1. RantCell Enterprise Web Dashboard enables users to analyze test data and end user KPI's received from multiple devices. User can perform consolidated data analysis.
2. Data and Time query of test data.
3. Supports tree based structure of devices and test data and for individual devices.
4. Supports interactive map view and graph view for all test analysis.
5. Real Time test data visibility to user.
6. Remote Test option to trigger test on remotely located devices.
7. Screen Cast allows accessing the device remotely from any location and performing touch operations over dashboard. (This feature works in conjunction with R-Pi supplied with RantCell software, specific license purchase is required for this feature to work).
8. Alarm panel is a consolidated view of failed tests from multiple test devices with causes in one place.
9. Live Tracking is used to tracking live test results which are being executed.
10. Under settings user can set required threshold parameters depending on requirement. User has option to perform statistical comparison between operators. For RantCell Enterprise customer they can provision new sub users in server, license pool allocation per sub user and view all test data on panel.
11. Table View, Graph View and Map View have been implemented for every test result available under all the sections mentioned above.

### RantCell Web Dashboard:

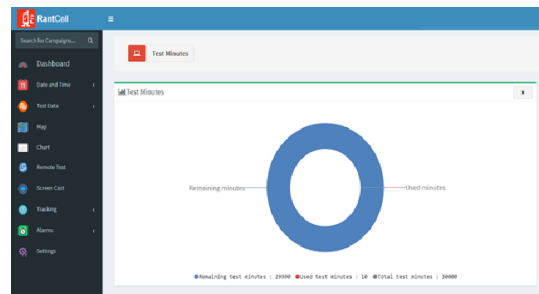
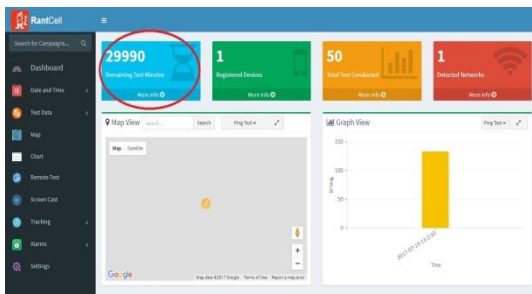
1. RantCell Web Dashboard displays the remaining test minutes, registered device, total tests conducted and detected networks on logging into account.
2. Maintains tree structure of devices and the tests performed under those devices.
3. RantCell Web Dashboard displays Map view, Bar Graph view and Table view of various campaigns performed in last one hour.

*Note: In Table view if it indicates '**Executing**' against a campaign, then it means the tests are currently being performed on that device as RantCell Web Dashboard captures real time data and once completed the status changes accordingly.*



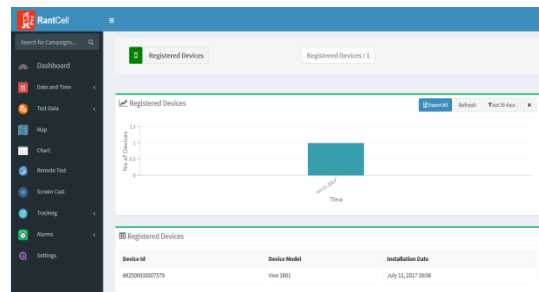
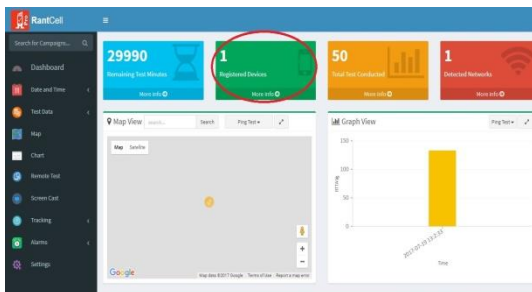
### Remaining Test Minutes:

This window shows used test minutes and remaining test minutes of his account. This is used to cap usage for specific user by administrator.



### Registered Devices:

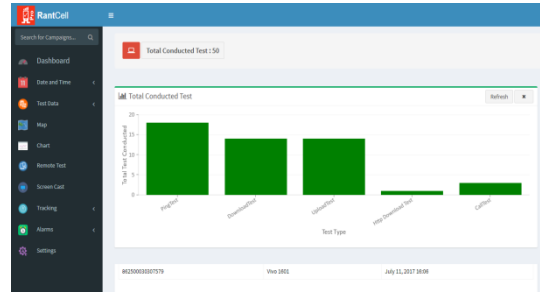
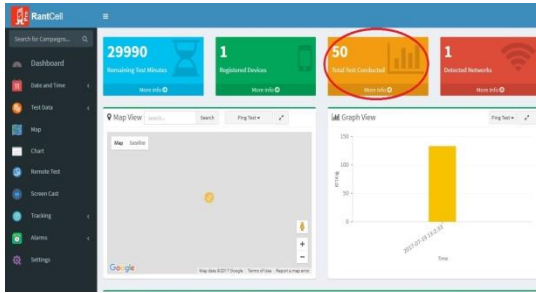
Registered devices refer to number of devices registered to particular user against user allocation.





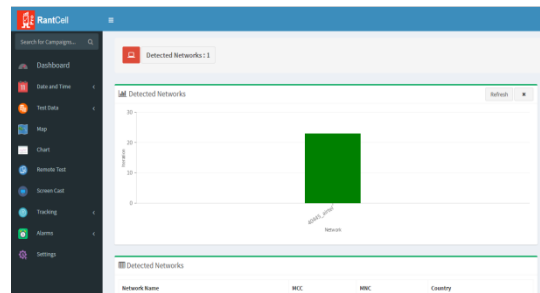
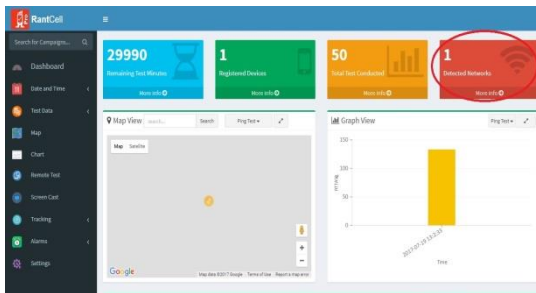
### Total Test Conducted:

Total Test Conducted refers to number of tests performed by assigned user in account.



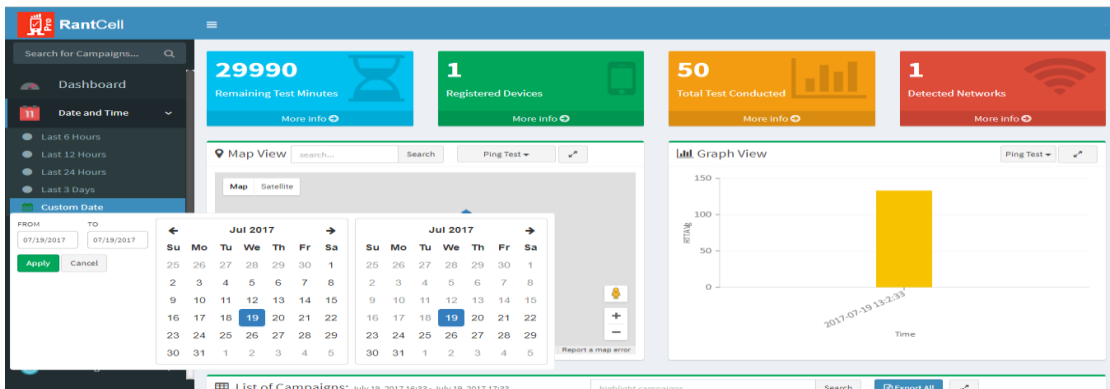
### Detected Networks:

Detected Network refer to total number of networks detected in user location i.e. list of networks where RantCell Enterprise App testing is performed by particular user.



### Date and Time:

In this option user can select options such last 6 hours, 12 hours, 24 hours, 3day or option of custom date to load test data

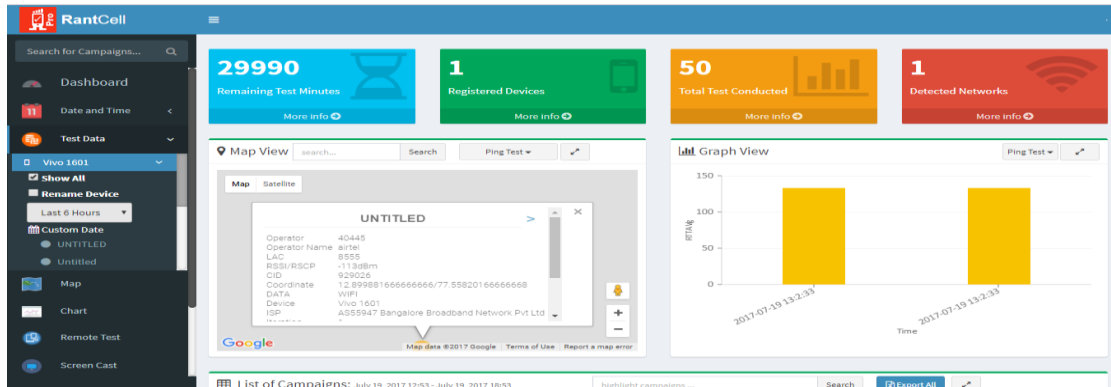


### Test Data:

1. All tests performed by particular user will be stored under test data of corresponding device used by user.



2. Under device option user can select test campaign and view test results in different formats i.e. Map View, Table View and Graph View.
3. After selecting particular device user has option to show all, if option is enabled user can view all test campaigns performed.



### 7.3 Table View

1. Table view is used significantly to view all individual tests results performed by user in a detailed format. It contains all significant network parameters like Cell ID, RSI/RSCP, ltePCI, lteRSRP, lteRSRQ, PSC, Network Operator, Operator Name, Network Data, LAC/TAC and Status.
2. User can select required campaign name under list of campaigns in web dashboard and view results of test.
3. User can export test campaigns to view summary of test results.
4. For saving test results user can save it either in excel format or share URL of test results. In top right corner next to table view option user has option to save, save in excel and share URL. In share URL option it creates SHA256 unique URL which can be shared to Non-RantCell user to view test results.



The screenshot shows the RantCell dashboard with a sidebar menu on the left containing options like Dashboard, Date and Time, Test Data, Map, Chart, Remote Test, Screen Cast, Tracking, Alarms, and Settings. The main area displays a donut chart indicating 'Total packet Received :8(100%)' and a table titled 'List of Campaigns' for the period July 19, 2017 18:26 - July 19, 2017 19:26.

Campaign Name	Test Name	Device	Itrms	Start	End	Ping Test(ms)			Speed Test(Mbps)		
						Max	Min	Avg	DLPeak	DLAvg	ULPeak
40445_airtel	UNTITLED	Vivo 1601	1	19-07-17 13:02:27	19-07-17 13:03:23	199	72	133	0	NaN	0

This screenshot shows a detailed view of a test campaign. It includes fields for Test Name (UNTITLED), Campaign Name (40445\_airtel), Device (Vivo 1601), Iterations (1), Start Time (2017-07-19 13:02:27), and End Time (2017-07-19 13:03:23). It also displays 'Ping Test Host: www.google.com' with resolved IP and average/minimum/maximum ping times. Below this is a table of network parameters and a 'Download Test Server' table.

	RSSI/RSCP	ItePCI	IteRSRP	IteRSRQ	PSC	NetworkOperator	OperatorName	NetworkData	LAC/TAC	Status
26	NS	426	-107	-14	NS	40445	airtel	WIFI	8555	OK

Iteration	StartTime	EndTime	NoOfConnections	FileSize(bytes)	TotalTime(s)	AvgDataRate(Mbps)	PeakDataRate(Mbps)	CellID	RSSI/RSCP
1	2017-07-19 13:02:43	2017-07-19 13:02:45	1	1048576	1.68	0.00	0.00	NS	NS

When you click on share URL option and open it, it will display the particular test campaign in mapview as well as tabular view as shown in the below screenshots

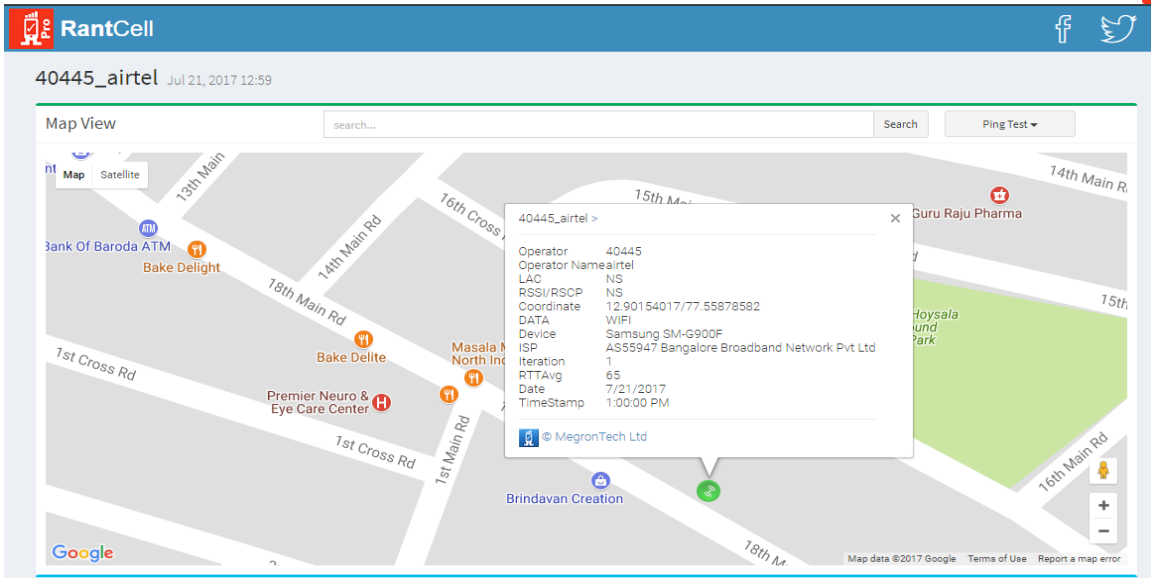


Table View

Ping Test															
Iteration	StartTime	EndTime	Sent	Received	Lost	RTTMin(ms)	RTTMax(ms)	RTTAvg(ms)	CellID	RSSI/RSCP	ItePCI	IteRSRP	IteRSRQ	CdmaRSS	
1	2017-07-21 12:59:55	2017-07-21 13:00:00	4	4	0	50	95	65	NS	NS	NS	NS	NS	NS	
2	2017-07-21 13:00:59	2017-07-21 13:01:04	4	4	0	73	239	128	NS	NS	NS	NS	NS	NS	
3	2017-07-21 13:02:08	2017-07-21 13:02:14	4	3	1	42	48	46	NS	NS	NS	NS	NS	NS	
4	2017-07-21 13:03:22	2017-07-21 13:03:27	4	4	0	47	60	55	NS	NS	NS	NS	NS	NS	
5	2017-07-21 13:04:31	2017-07-21 13:04:36	4	4	0	64	122	90	NS	NS	NS	NS	NS	NS	
6	2017-07-21 13:05:48	2017-07-21 13:05:53	4	4	0	54	75	63	NS	NS	NS	NS	NS	NS	
7	2017-07-21 13:06:57	2017-07-21 13:07:02	4	4	0	48	219	93	NS	NS	NS	NS	NS	NS	

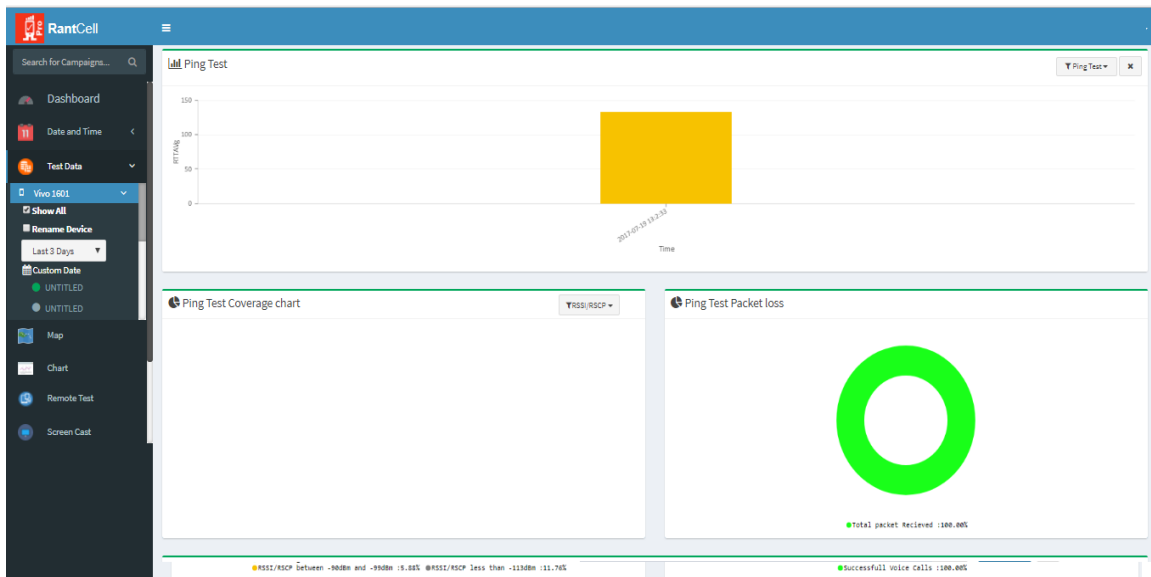
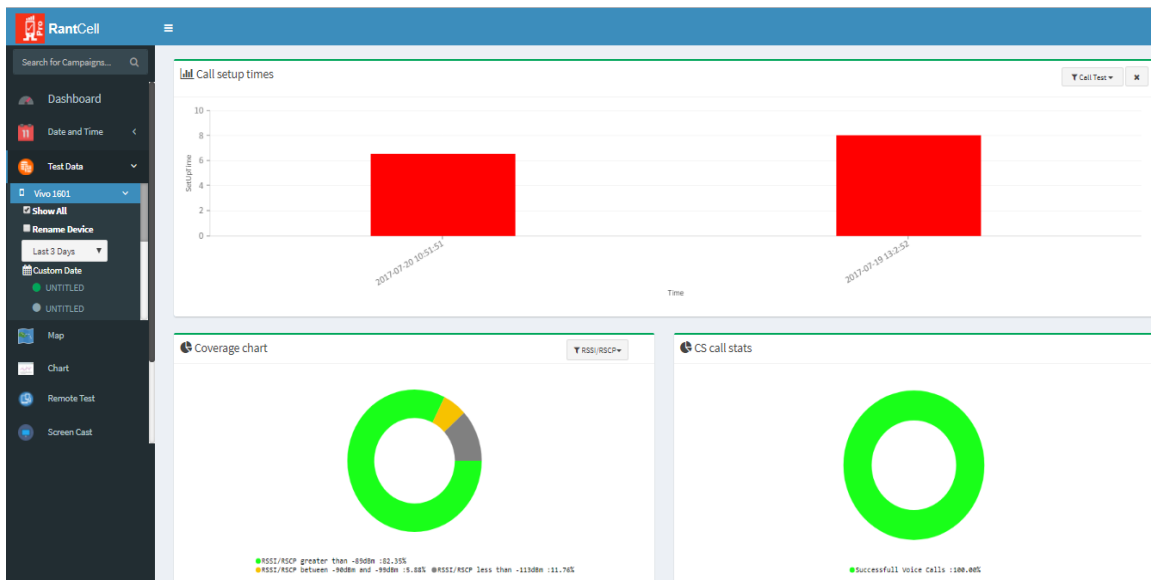
## 7.4 Graph View

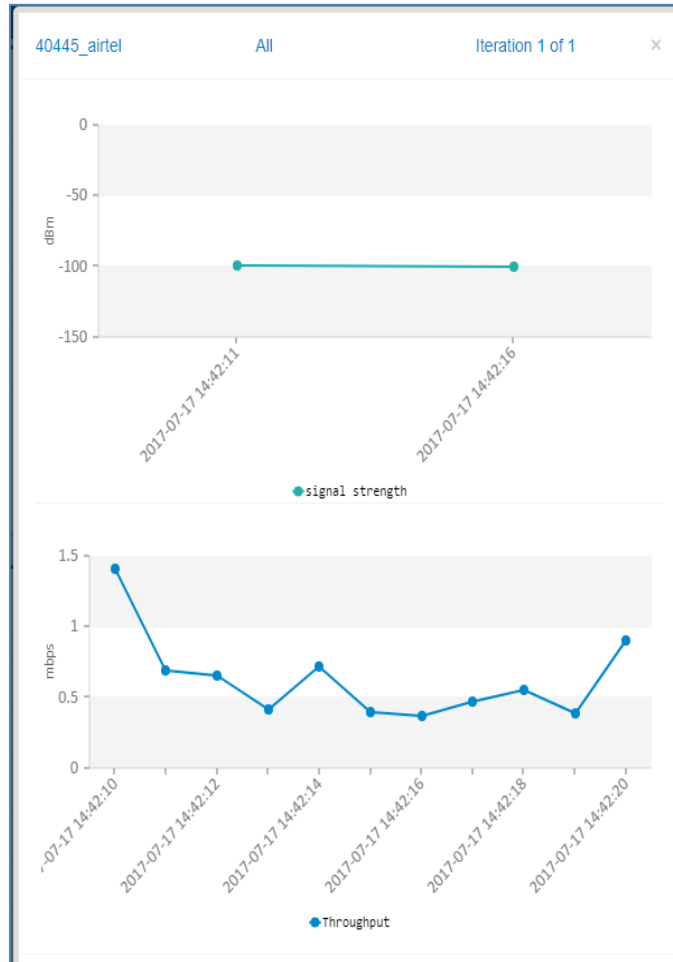
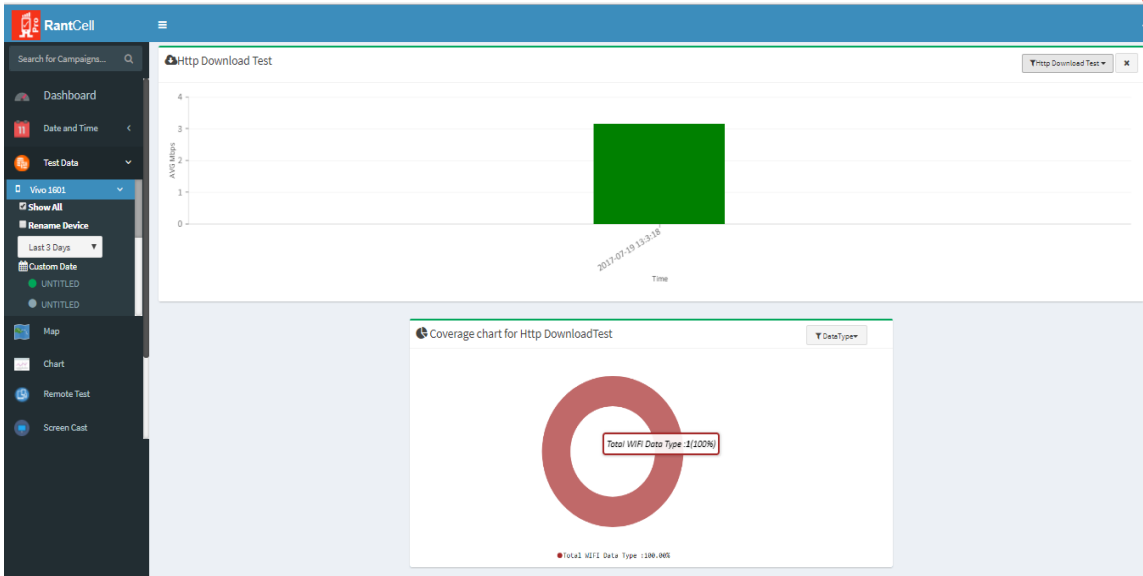
- Using graph view user can check test results in Bar Graph or Donut Chart and compare results with all previous test results.
- At top right corner of graph view user has option to select Ping Test, Speed Test, Call Test and HTTP Test to view respective graphs.
- On Hovering mouse on Bar Graph by selecting type of test user can view tool tip window which contains following details AVG Mbps for Speed Test, Setup Time for Call Test, RTT Avg for Ping Test and HTT Avg Mbps for HTTP Test. The rest parameters are common are like Iterations, Campaign Name, User Test Name, Device Name, Data Type, Status, Cell ID, Operator Name, MCC, MNC, Lost Packet, Received Packet, Send Packet and Time.





4. On clicking particular iteration of graph, user can see drill down view of particular iteration. The drill down view is applicable for Call test, Speed test and HTTP test
5. Donut Chart shows statistical information about percentage amount of time user stayed on 2G, 3G or 4G during test execution time.
6. Graph View and Donut Chart provide statistical information on performance of specific mobile in terms of coverage strengths, RAN type connectivity received by user during performance of tests.

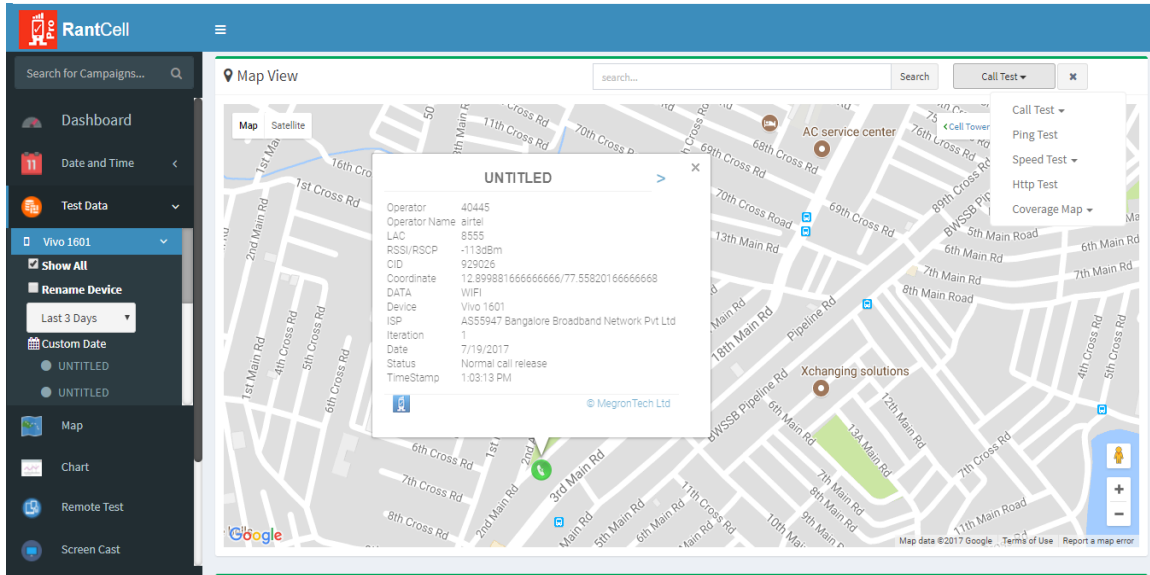






## Graph View Coverage Chart

Coverage chart includes many parameters like RSSI, RSSI (CDMA), RSRP, RSRQ, CDMAEcNo, CDMA SNR, Data and Data Type for Ping Test, Download Test and Upload Test for Speed Test and Call Test.



## 7.5 Map View

Map View feature allows user to view test results on map, which is used to find out RTT average value, Download Speed, Upload Speed, Call Dropped and with Data type, Vital Network parameters and Coverage Map.

**Map View-Ping Test:** It provides the location of the Ping test results, Operator Name, Cell Identity, LAC, PSC, RSSI and RTT value etc. Based on RTT value, the colour code is notified.

**Map View-Speed Test:** Location of Speed test results, Operator Name, Cell Identity, LAC, PSC, RSSI and Download Speed and Upload Speed, Bit Rate value. Based on Bit Rate value colour code is notified

**Map View-Call Test:** Location of Call test results, Operator Name, Cell Identity, LAC, PSC, RSSI and Call setup time, Call In progress and Call Completed status.

**Map View-Coverage Map:** Map view network details such as RSSI, LTE & CDMA Parameters and Data Type. It also provides location of test results, Operator Name, Cell Identity, LAC, PSC and Networks like 2G, 3G and 4G etc.



## Map View – Ping Test

The screenshot shows the RantCell interface with a sidebar on the left containing navigation options like Dashboard, Test Data, and Map. The main area displays a Google Map of the Blagrove area. A pop-up window titled "M4 Drive test" is open, showing the following details:

Operator	23430
Operator Name	EE
TAC	NS
Coordinate	51.54963317366415/-1.8442635713683646
DATA	LTE
Device	S7
Iteration	4
RTT Avg	39
Date	5/17/2017
TimeStamp	9:11:38 PM

## Map View – Call Test

The screenshot shows the RantCell interface with a sidebar on the left containing navigation options like PNG, SCH, 51yn, 20 Itms, demo Swindon, and swindon. The main area displays a Google Map of the Gloucester area. A pop-up window titled "Wifi1" is open, showing the following details:

Operator	23430
Operator Name	EE
LAC	11161
RSSI/RSCP	NS
CID	6774785
Coordinate	51.557882465440684/-1.821958436543494
DATA	WiFi
Device	S7
ISP	AS12576 EE Limited
Iteration	1
Date	7/20/2017
Call Setup Time (ms)	2939
Status	Call in progress
TimeStamp	12:40:45 PM



## Map View – Speed Test (Download Test)

The screenshot shows the RantCell Pro interface with a map view of the M4 motorway area. A pop-up window titled "M4 Drive test" displays the following data:

Operator	23430
Operator Name	EE
BitRate (Mbps)	20.89
TAC	11160
CID	6444110
Coordinate	51.54737427131507/-1.9535993885414784
DATA	LTE
Device	S7
Iteration	25
LCID	14
ltePCI	214
lteRSRP	-100
lteRSRQ	-7
Date	5/16/2017
TimeStamp	10:24:39 PM
eNBID	21266

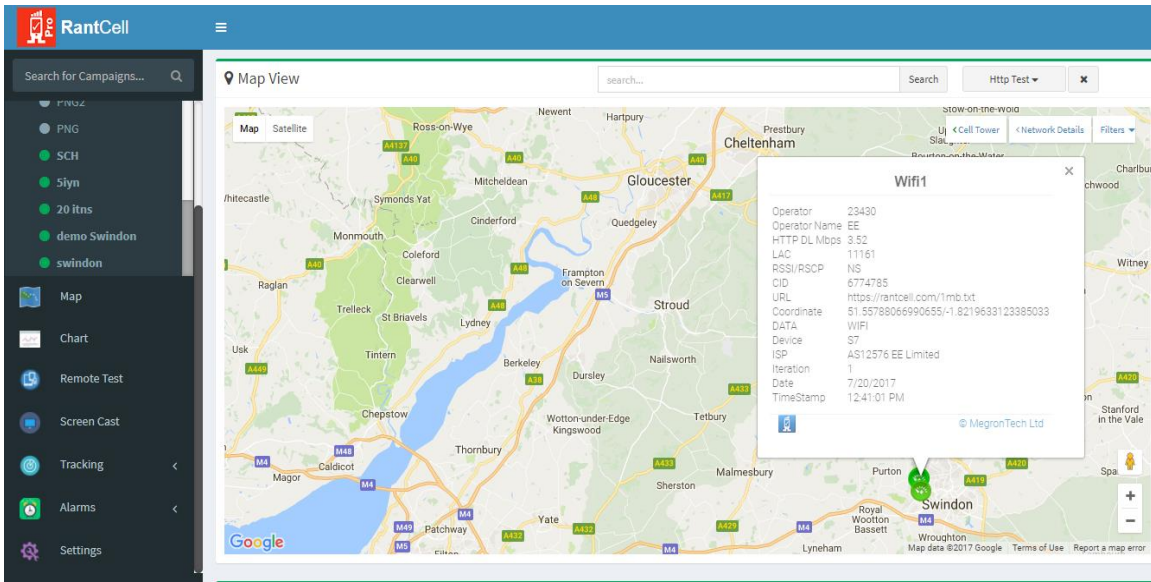
## Map View – Speed Test (Upload Test)

The screenshot shows the RantCell Pro interface with a map view of the M4 motorway area. A pop-up window titled "M4 Drive test" displays the following data:

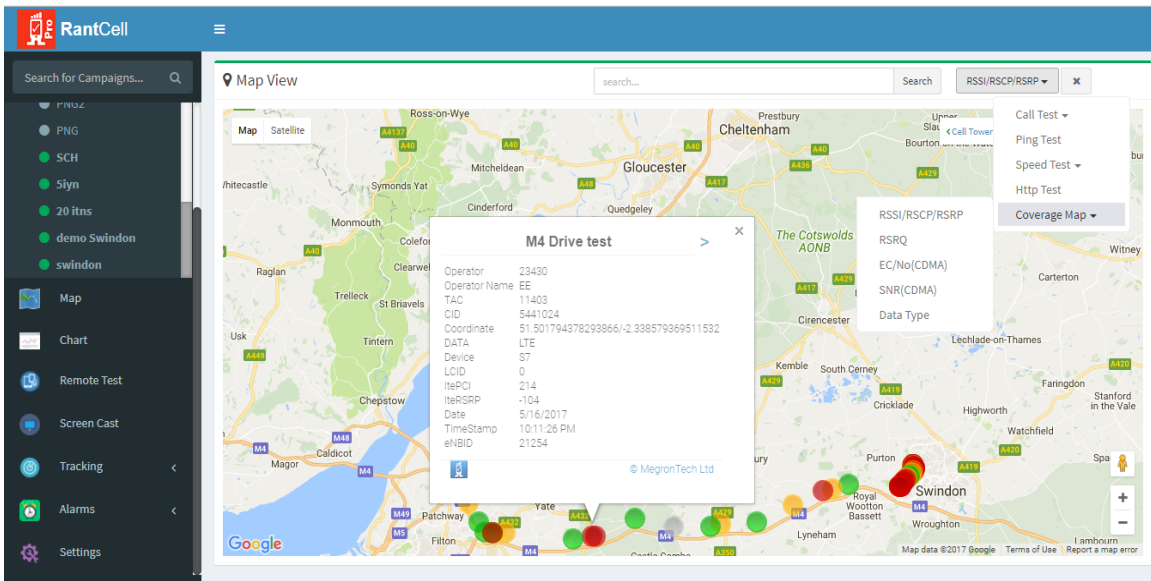
Operator	23430
Operator Name	EE
BitRate (Mbps)	1.80
TAC	11161
CID	6692352
Coordinate	51.54960898883492/-1.8446340413057078
DATA	LTE
Device	S7
Iteration	7
LCID	0
ltePCI	216
lteRSRP	-106
lteRSRQ	-8
Date	5/17/2017
TimeStamp	6:58:12 PM
eNBID	26142



## Map View – HTTP Test

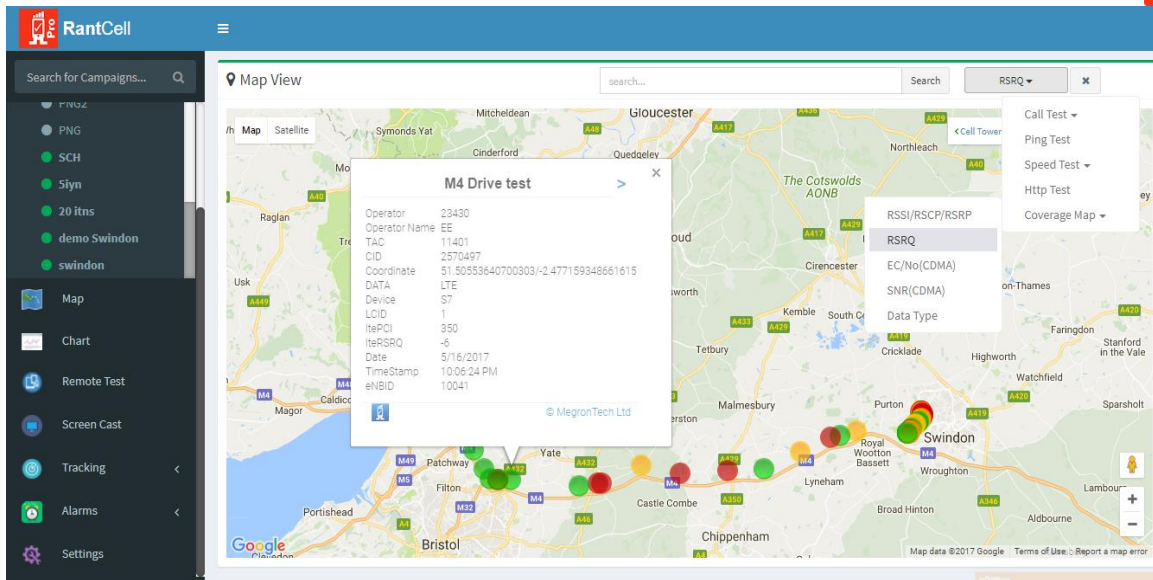


## Map View – Coverage Map (RSSI/RSCP/RSRP)

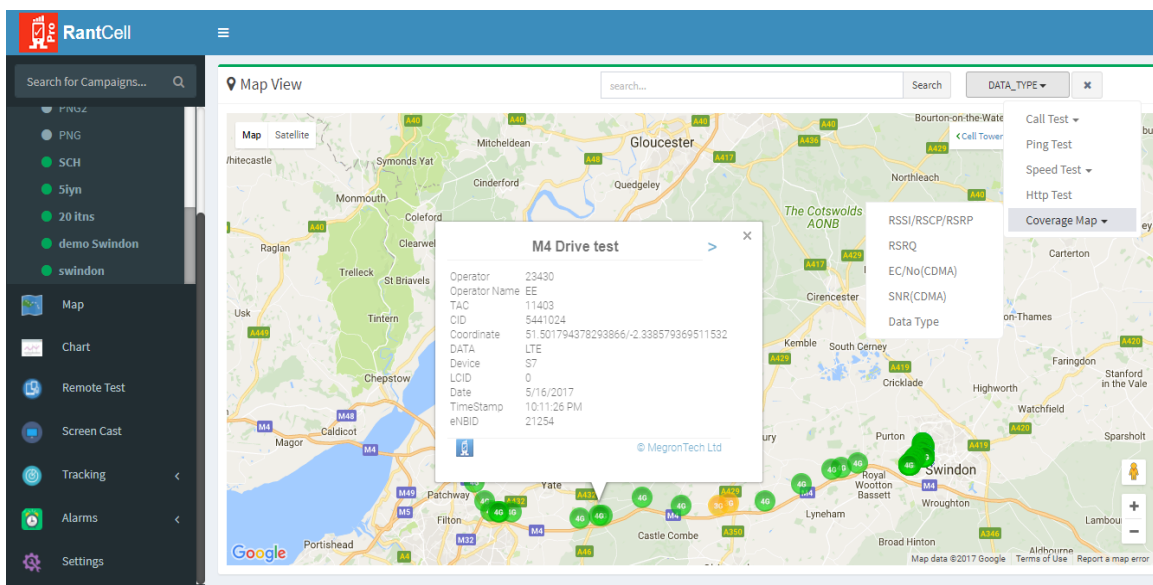


## Map View – Coverage Map (RSRQ)





Map View – Coverage Map (Data Type)



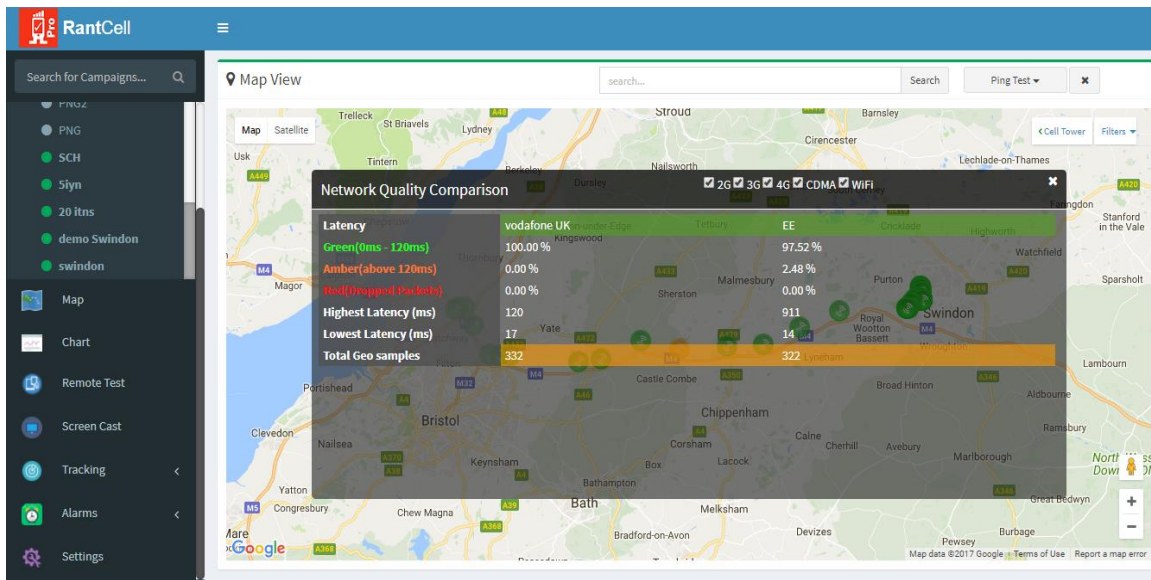
## 7.6 Network Quality Comparison Operators.

How to compare data between operators:

1. Network Operator Comparison is used to compare various operator's quality of Network, Signal Strength and Latency in terms of highest and lowest, Speed Test, call drop and Total Geo Samples.
2. To check Network details, load test data in expanded map view and select type of test, then select network details on right corner of web dashboard. The results of network comparison with 2G, 3G, 4G, CDMA and WiFi will be shown as in image below.



- Please note that this is a statistical comparison between the operators, however ideally to compare between the operators user has to perform same kind of tests on same type of device model with same drive route.



## 7.7 Remote Test

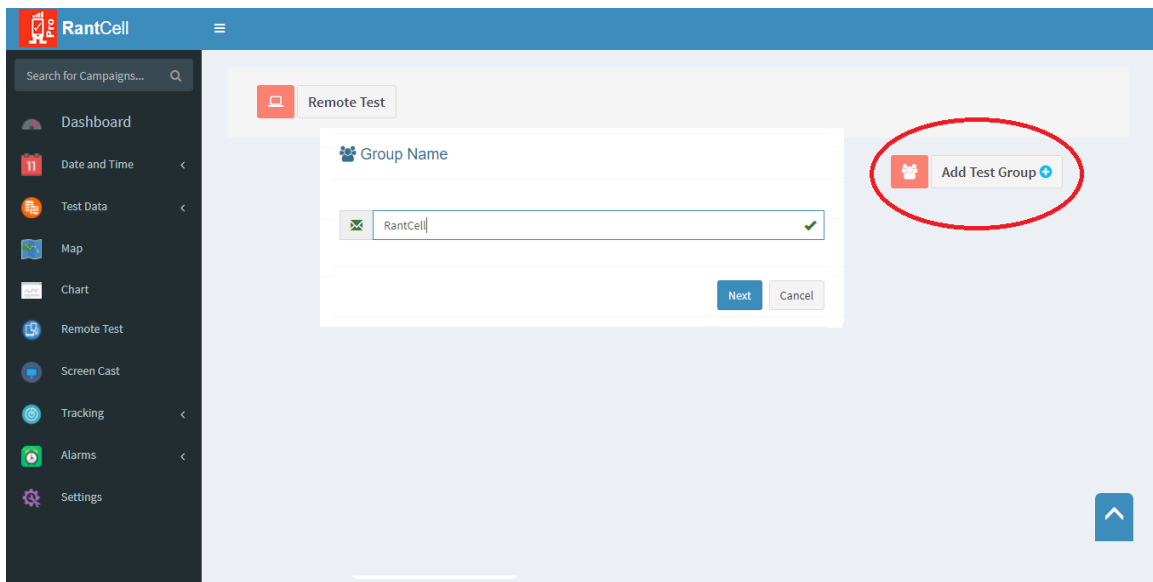
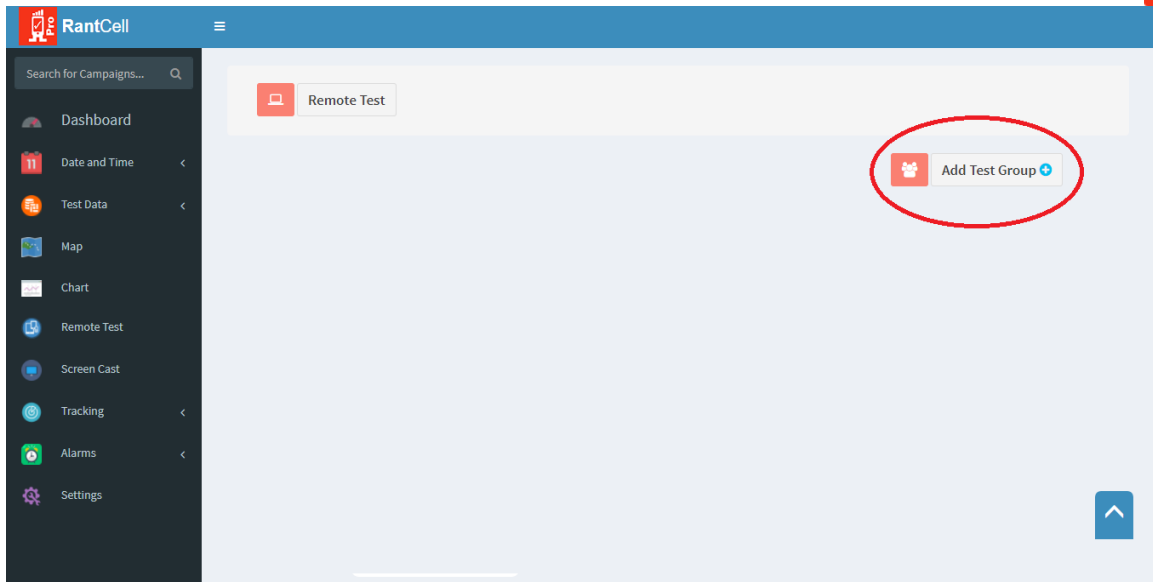
Remote Test is a technology that allows user to configure test and run tests on RantCell enterprise app on a remotely located devices from RantCell enterprise web dashboard.

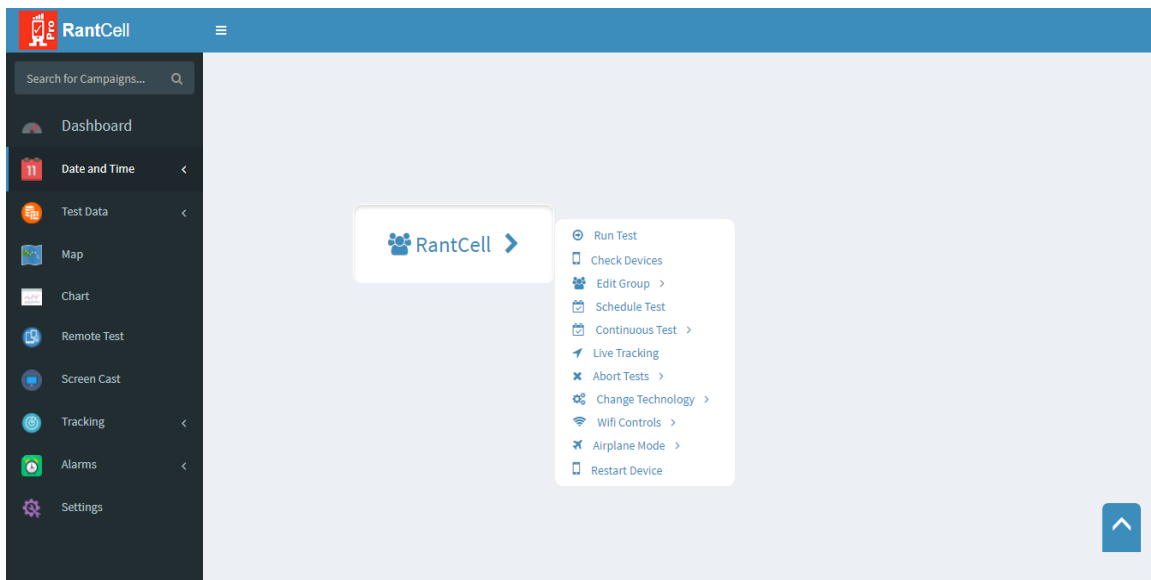
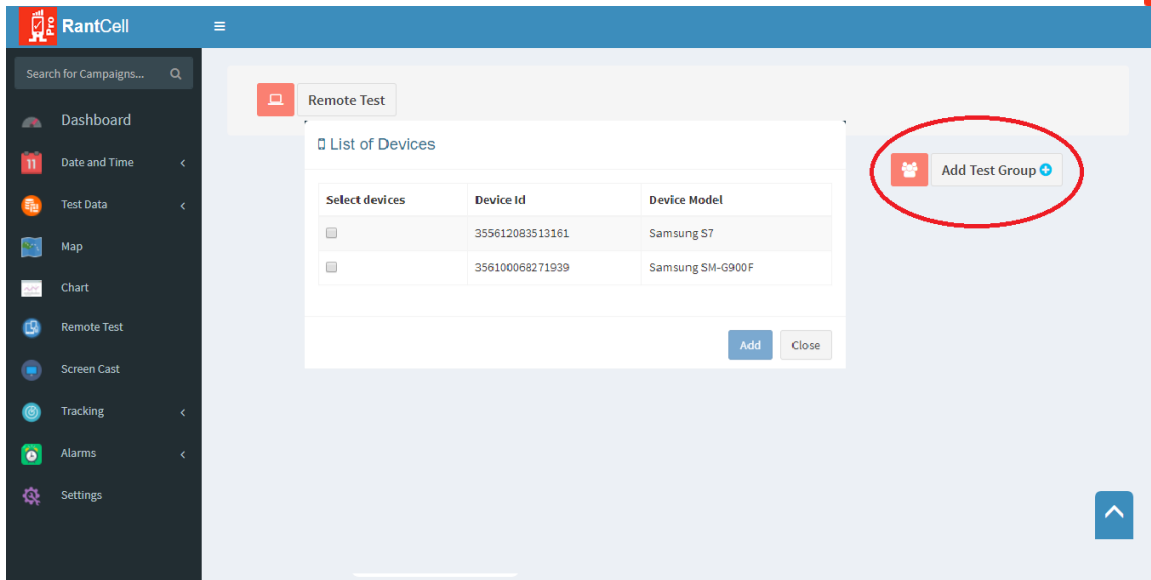
### How to create test through remote test?

Login into RantCell web dashboard and select Remote option

- Click on add test group.
- Enter group name.
- Select the device or multiple devices and click on add.
- Click on add to create group.







### How to run Remote test?

1. Click on group name and run test
2. Similar to RantCell Enterprise App select test configuration enter test name and iterations.
3. Select the required test and then start the test.

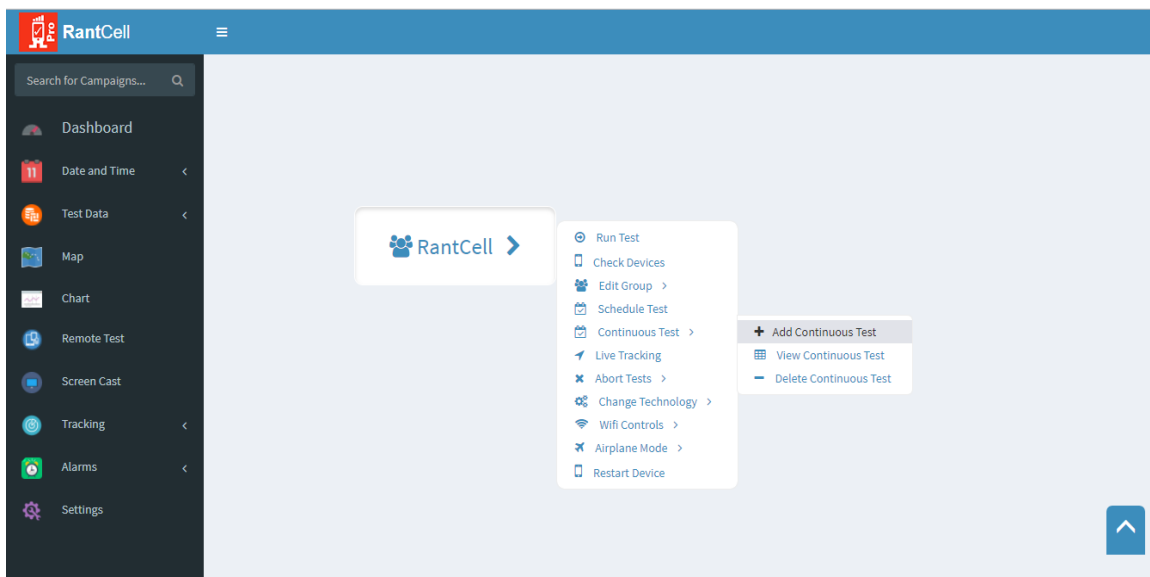
### Features of Remote Test:

1. Schedule Test
2. Check Device Status
3. Add and Delete Device from Group
4. Live Tracking
5. Abort Test



## 7.8 Continuous Test

1. Aim of this feature is to perform user specified test at specified interval (15min, 30 min etc) on the network by RantCell pro app and report failures of tests via email notification (Optional).
2. Complete no network scenario: Test will still be performed by RantCell Pro app at specified interval; however the failed results will be uploaded to cloud server when the connectivity is restored. In this scenario, tester will not receive notification until network connectivity is restored.
3. A test failed in connected scenario: For example user had configured an Ping, speed , call test and there was a failed call then network the user will receive notification almost instantly.
4. This feature should not be treated as device status notifies, it's rather notification of test failures.
5. When the Continuous Test is performed, user can choose network type for testing and chosen network type will update automatically in the app.



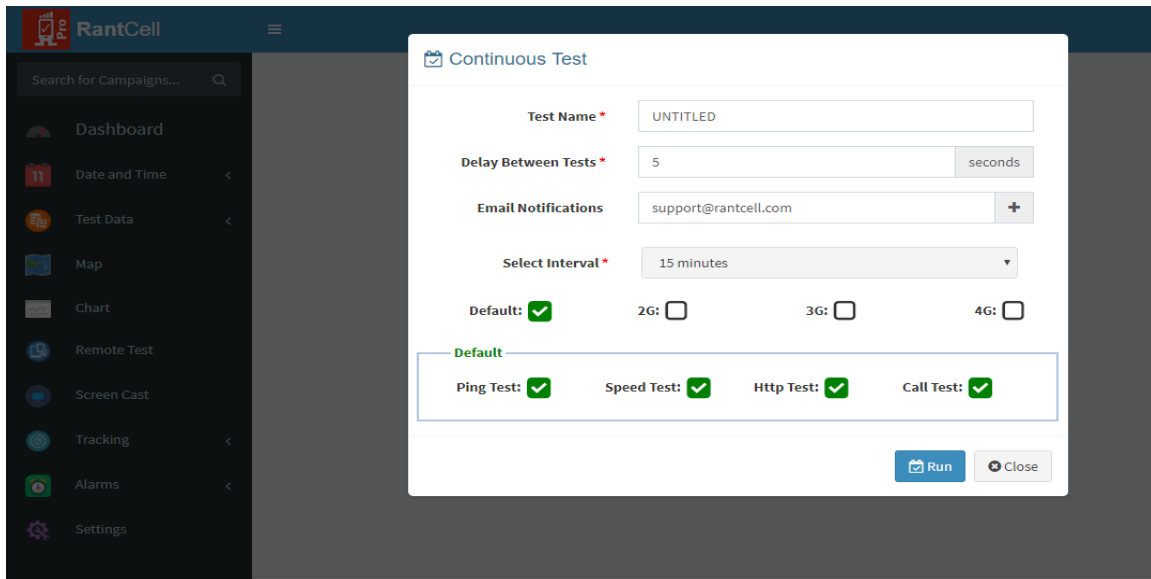
### How to add new Continuous Test?

1. Click on add Continuous Test.
2. Select network technology type as Default or 2G or 3G or 4G and select test configuration for each tests. (Please note this is not supported on all devices and this is supported only on rooted device and refer rooted features section in this document). Rooted Features Device will operate only on specific RAN technology.
3. User can configure Ping Test, Speed, Test, HTTP Test and Call Test.

### Default Network Technology Continuous Test

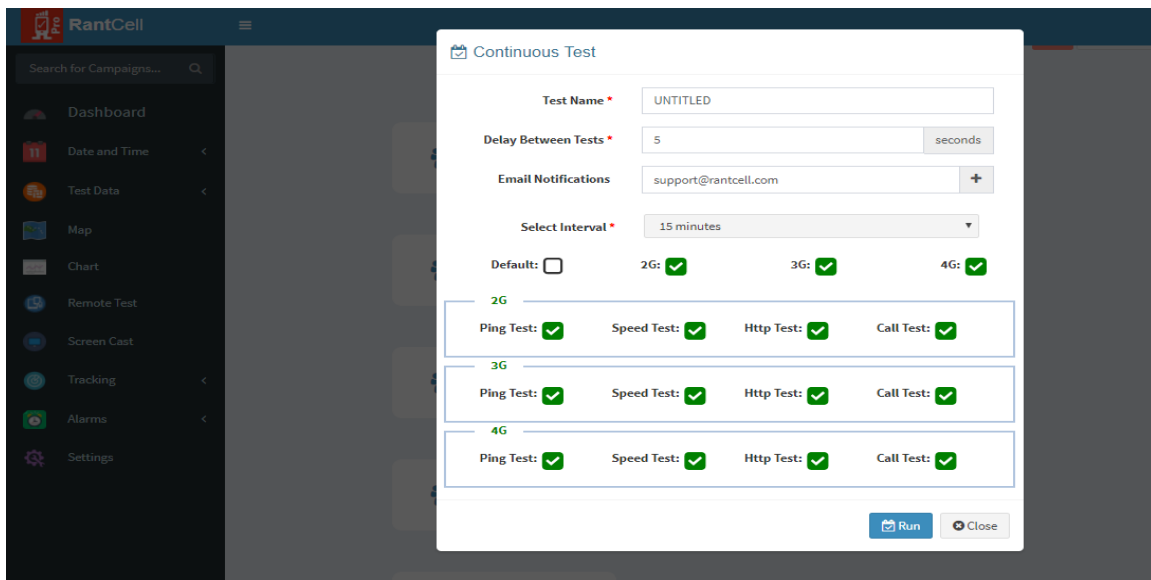
Test will execute only on default mode which is device dependant .i.e. selection of RAN technology while testing (2G, 3G or 4G) is dependent on device.

## Default Mode of Continuous Test:



## Unattended periodic Continuous Test with Auto RAN Layer Switching:

In this Continuous Test, test will execute on by forcing the device to select 2G, 3G and 4G consecutively based on time interval.



## View Continuous Test

To view Continuous Test configured test details click on 'View Continuous Test' for default network mode, 2G, 3G and 4G technology.

## Delete Continuous Test



To delete Continuous Test click on 'Delete Continuous Test' option and configured Continuous Test will be deleted from app automatically and aborted.

## 7.9 Schedule Test

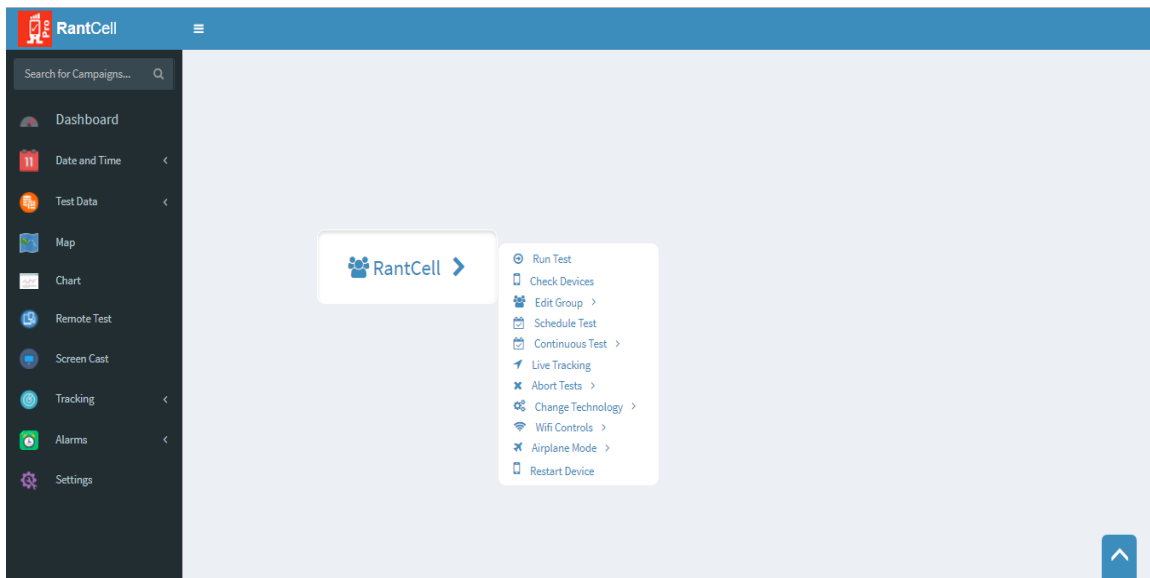
Schedule Test is a technology that allows scheduling specific test at required time on remotely located devices with RantCell Enterprise App. User can configure any or all the tests below. Following tests can be scheduled on a specific group having more than one or more devices.

**Ping test:** Ping test can be configured with the default host or specific host.

**Speed test:** User can configure Upload and Download Speed Test with any number of parallel connections starting from 1 up to 6. User can also configure Speed Tests with default server OR User can connect to any FTP server with valid username and password and download the particular file required.

**HTTP test:** HTTP Test can be configured with default server and file size OR it can be configured with manual server.

**Call Test:** Call Test can be configured by giving the B-party phone number and the call duration.

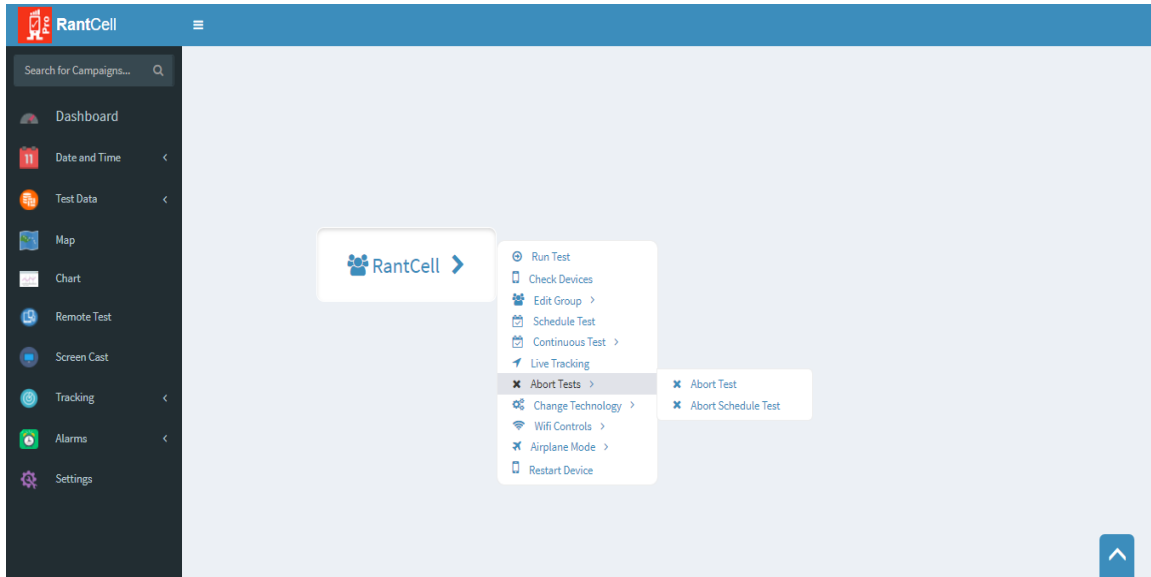


### How to Run a Schedule test?

1. Click on group name and select schedule test.
2. Enter test name, number of iterations, delay between test and date & time at which test to be executed.
3. Select the required test and then click on run.

## How to Abort Schedule test?

1. Click on group name and select abort test.
2. Click on abort schedule test and an alert window will pop-up and click again on abort test and particular test will be aborted.



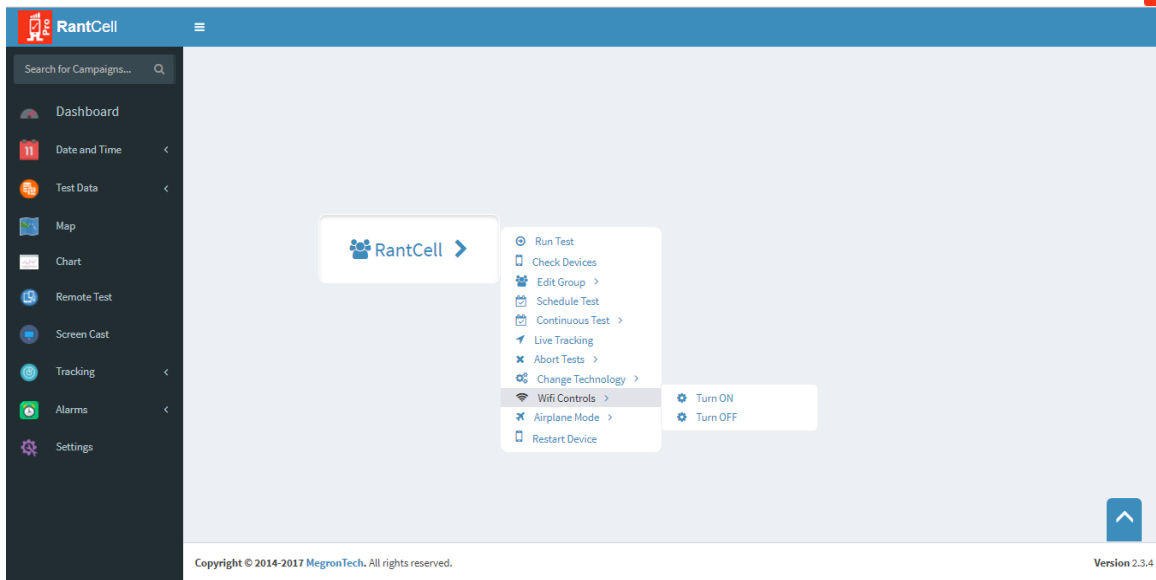
## 7.10 Rooted Device Features

RantCell Web Dashboard allows user to have certain set of features particularly for rooted devices. The available features are listed below for reference:

1. Remote reboot of device
2. Forcing device to select specific type of RAN technology i.e. 2G ,3G and 4G
3. Turning ON/OFF of the Wi-Fi on remote device
4. Toggle flight mode (Switch ON/OFF of flight mode)
5. Auto reboot device when no network connectivity for more than 5mins.

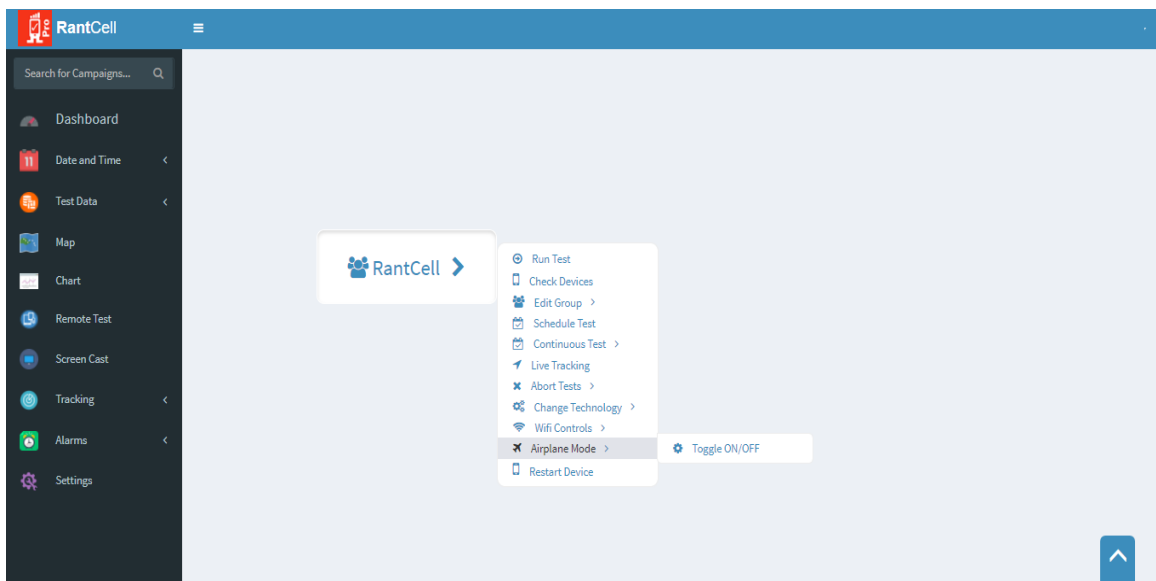
### Wi-Fi Turn ON/OFF Feature:

Click on group name and select Wi-Fi Controls option to either turn ON / OFF. This feature enables user to turn ON / OFF Wi-Fi remotely using RantCell Web Dashboard.



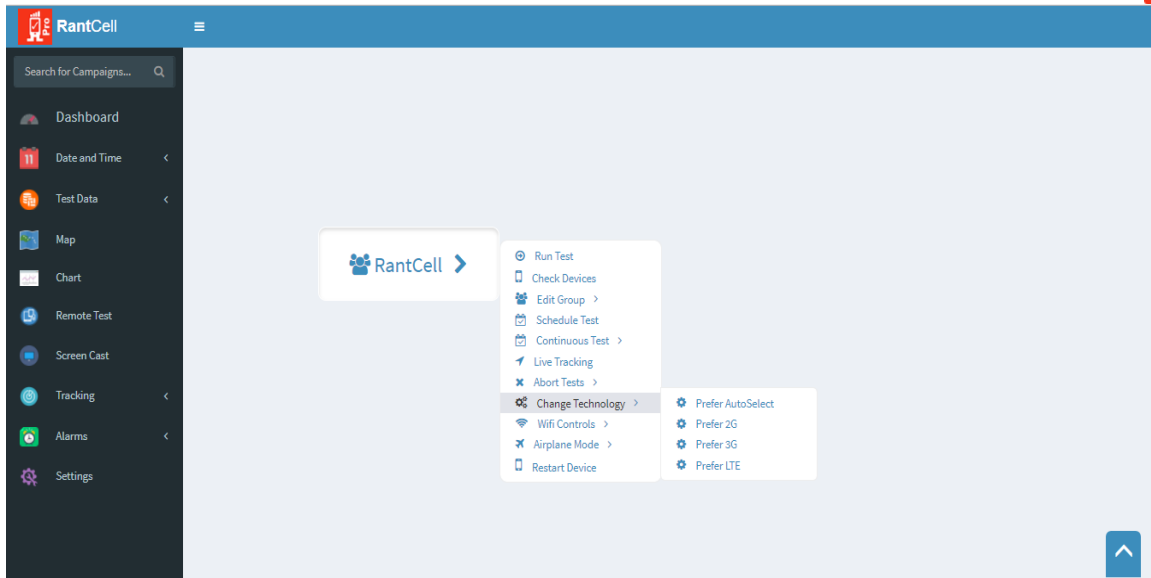
### Turn ON/OFF Airplane Mode:

Click on group name and select Airplane Mode option to Toggle ON / OFF. This feature enables user to turn ON / OFF Wi-Fi remotely using RantCell Web Dashboard.



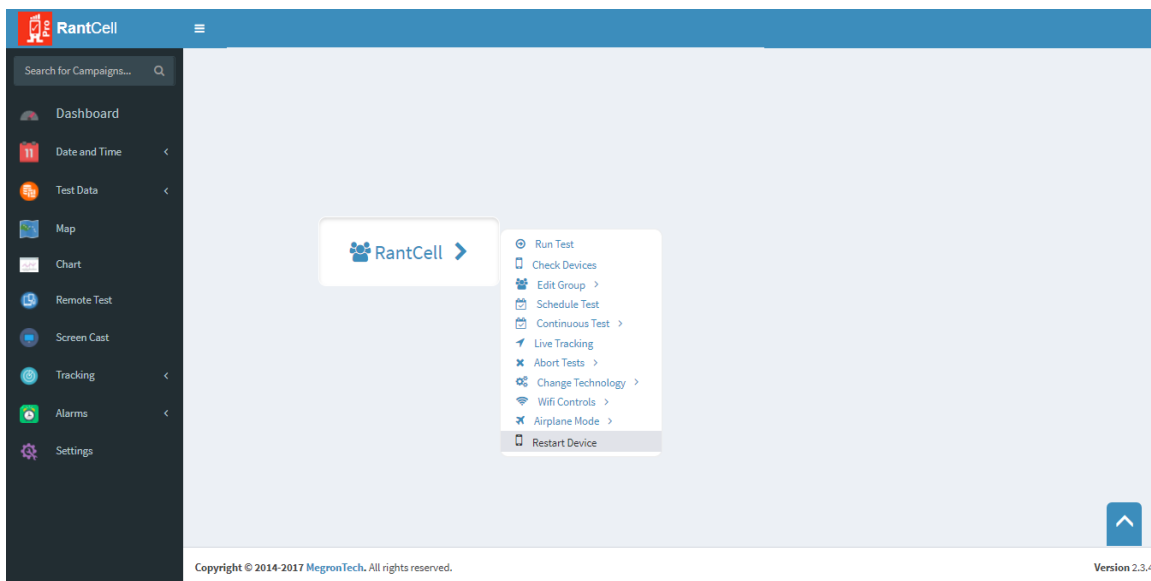
### Change Technology:

Click on group name and select Change Technology option to select Prefer Auto Select, Prefer 2G, Prefer 3G and Prefer LTE (4G). User can change network technology at any given time according to his preference through RantCell Enterprise Web Dashboard. In case user select Prefer Auto Select mode network technology it will change according network strength.

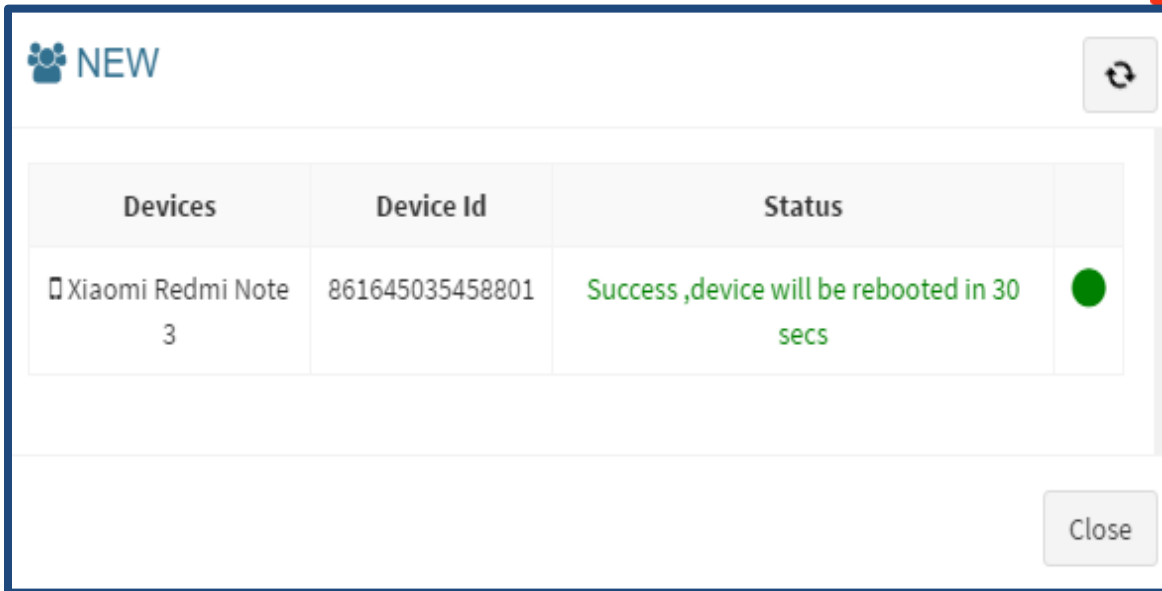


### Restart Device:

Click on group name and select Restart Device option to reboot device which is located remotely. This feature can be used through RantCell Enterprise Web Dashboard, once the option is selected by user device automatically reboots after 30 seconds. After user selects this option a pop message will be displayed stating “Success device will be rebooted in 30 seconds along with Name and device IMEI number” as shown in image below:







The screenshot shows a software interface with a header 'NEW' and a refresh icon. Below is a table with three columns: 'Devices', 'Device Id', and 'Status'. The table contains one row with the following data:

Devices	Device Id	Status
<input type="checkbox"/> Xiaomi Redmi Note 3	861645035458801	Success ,device will be rebooted in 30 secs

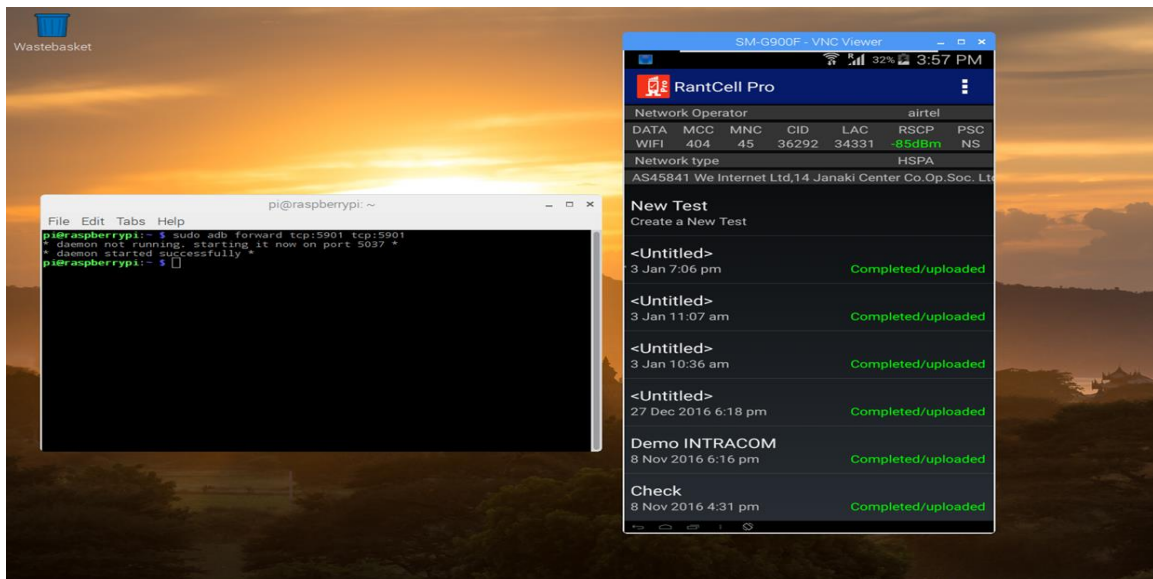
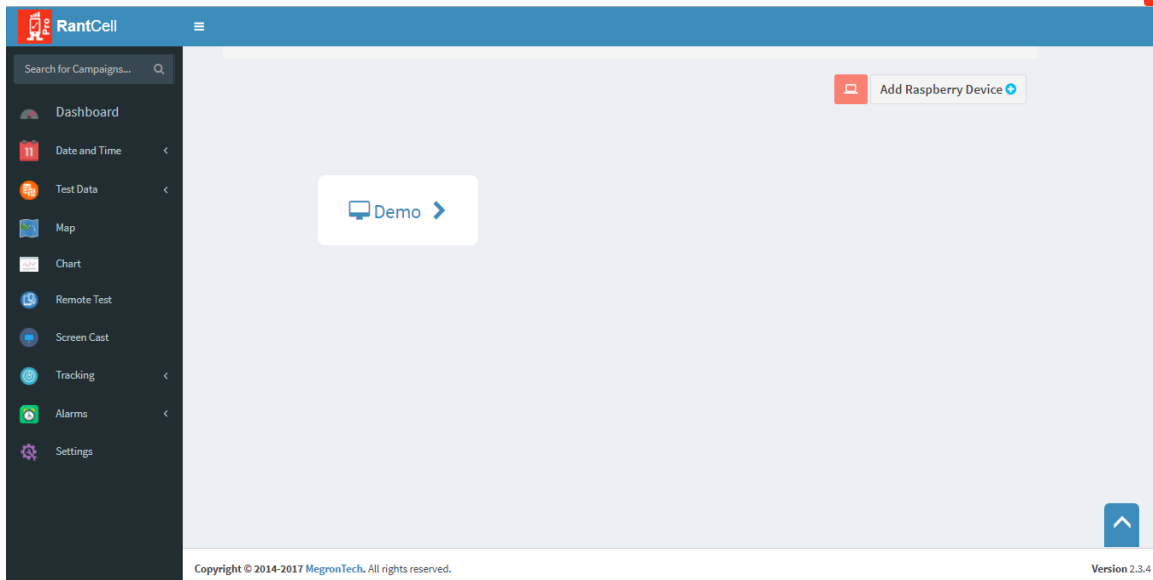
At the bottom right of the interface is a 'Close' button.

#### Auto Reboot of device:

1. This feature triggers a reboot on device when there is no network available for more than 5 mins of duration. Our definition of no network is when there is no data connectivity. This will be checked by pinging 8.8.8.8 IP. (Not signal level).
2. When “a” condition is met (RantCell enterprise app is in IDLE status (i.e. not performing Remote test, Manual test and scheduled test)) and there is no network, then a 5 mins timer will be triggered. If within this duration connectivity is restored this timer is aborted else device will be rebooted.
3. Effectively it might take about 5min to 15mins for Auto Reboot to trigger a reboot on device.

### [7.11 Screen Cast](#)

Screen Cast is a technology that allows users to connect to smartphone and access it remotely via Raspberry Pi. The user can access the device screen remotely and perform normal tap operations on the device. Please contact [support@rantcell.com](mailto:support@rantcell.com) for further details on this feature.



## 7.12 Live Tracking

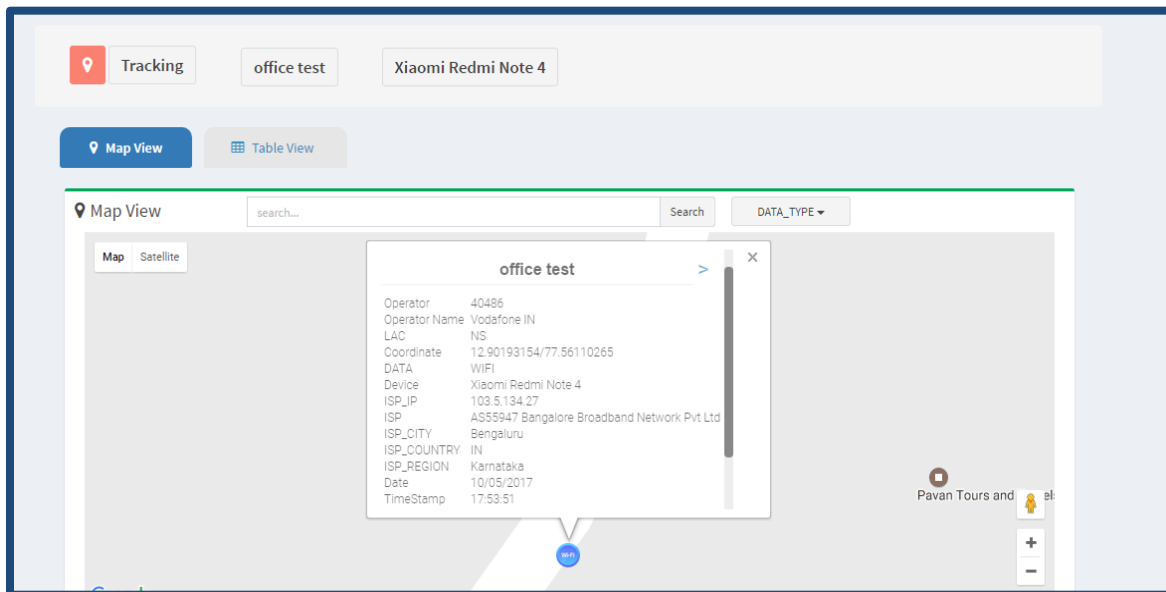
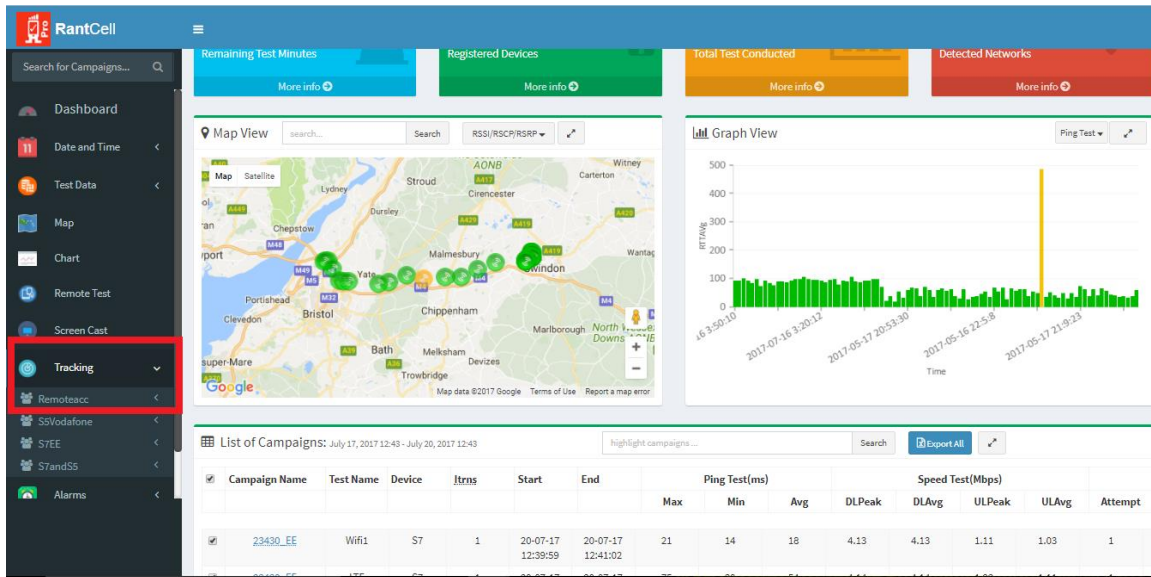
Live Tracking is used to identify and track location and live test results. In Tracking, user can check the table view and map view results of live tests.

Pre-Conditions to do Live Tracking

1. Must Create Remote Test group.
2. Select device under group
3. Run test remotely or on the RantCell Enterprise App
4. Click on live tracking tree on the left hand panel, navigate to the group where the device is located and select the device which is performing / executing tests. This option doesn't work if



test is already completed. Useful to track when they are more than 10 iterations are executing and real time view is required.



## 7.13 Alarms

1. Alarm panel is designed for detailed information about all the tests which has failed from various devices.
2. User can check alarms based on:
  - Last 6 hours
  - Last 12 hours
  - Last 24 hours
  - Last 3 days



- Custom date
3. There is also an option, while configuring Continuous Test user must add his email address, to receive alarm notification in real time.

The screenshot shows the 'Alarms' section of the RantCell interface. The table lists various test failures with the following columns: Failure Cause, Device Name, Test type, Start Time, End Time, Campaign Name, CellID/ECI, and Iteration Id.

Failure Cause	Device Name	Test type	Start Time	End Time	Campaign Name	CellID/ECI	Iteration Id
Read timed out	S7	UploadTest	2017-07-20 12:40:14	2017-07-20 12:40:27	23430_EE	6774785	1
Read timed out	S7	UploadTest	2017-07-20 12:34:49	2017-07-20 12:35:01	23430_EE	6774785	1
Read timed out	S7	UploadTest	2017-07-18 23:24:31	2017-07-18 23:25:50	23430_EE	NS	1
Read timed out	S7	UploadTest	2017-07-18 23:28:03	2017-07-18 23:28:24	23430_EE	NS	2
Read timed out	S7	UploadTest	2017-07-18 23:30:19	2017-07-18 23:30:43	23430_EE	NS	3
Read timed out	S7	UploadTest	2017-07-18 23:32:29	2017-07-18 23:32:49	23430_EE	NS	4
Read timed out	S7	UploadTest	2017-07-18 23:34:29	2017-07-18 23:34:49	23430_EE	NS	5
Read timed out	S7	UploadTest	2017-07-18 23:36:30	2017-07-18 23:36:51	23430_EE	NS	6
Read timed out	S7	UploadTest	2017-07-19 01:35:47	2017-07-19 01:36:18	23430_EE	NS	63

## 7.14 Settings

Settings refer to parameter threshold settings.

1. According to user requirement, user can change range of parameters threshold on RSSI, RSRP, RSRQ, CDMA parameters, Ping test, Download test and Upload Test. These thresholds have impact on the colour coding on graphs and map view.
2. After Updating parameter range, the user needs to save settings.
3. Please note that these preferences are unique to the particular user account.

The screenshot shows the 'Parameter Threshold settings' page in RantCell. It displays settings for RSSI/RSCP and RSRP, each with a 'dBm setting' and an 'Icons' column. The RSSI/RSCP settings are:

dBm setting	Icons
Greater than equal to -89	Green
Between -90 and -99	Yellow
Between -100 and -112	Red
Less than equal to -113	Grey

The RSRP settings are:

dBm setting	Icons
Greater than equal to -89	Green
Between -90 and -99	Yellow
Between -100 and -112	Red



The screenshot shows the 'Upload Test' configuration page in the RantCell application. It features a sidebar with navigation options like Dashboard, Date and Time, Test Data, Map, Chart, Remote Test, Screen Cast, Tracking, Alarms, and Settings. The main content area is titled 'Upload Test' and contains three test criteria:

- Greater than equal to 0.5 mbps (Green icon)
- Between 0.49 mbps and 0.2 mbps (Yellow icon)
- Less than 0.2 mbps (Red icon)

Below these is a section for 'Mobile network coverage type' with a table:

Data Type	Icons
4G Network	Green icon
3G Network	Yellow icon
2G Network	Red icon
Wi-Fi	Blue icon
CDMA Network	Blue icon

At the bottom of the settings area are 'Save Settings' and 'DefaultSettings' buttons. The footer includes 'Copyright © 2014-2017 MegronTech. All rights reserved.' and 'Version 2.3.4'.

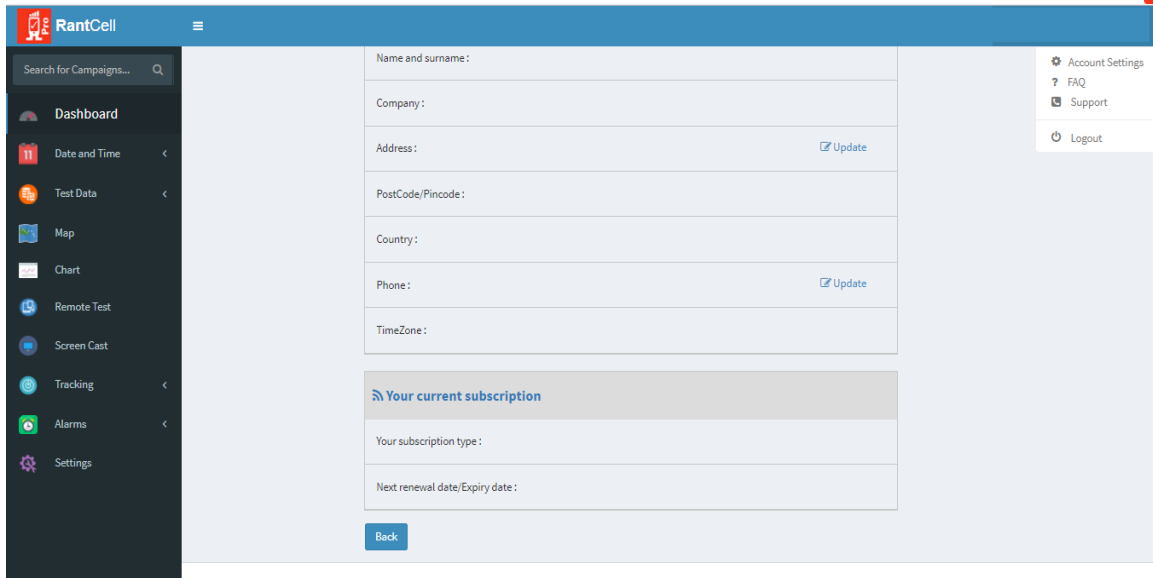
### Account Settings:

In this option user will be able to view registered email ID and have option to reset password. Apart from this user can view his personal details along with current subscription plan. For more details refer to image below.

The screenshot shows the 'Account Settings' page in the RantCell application. It features a sidebar with navigation options. The main content area is titled 'Account Settings' and contains two sections:

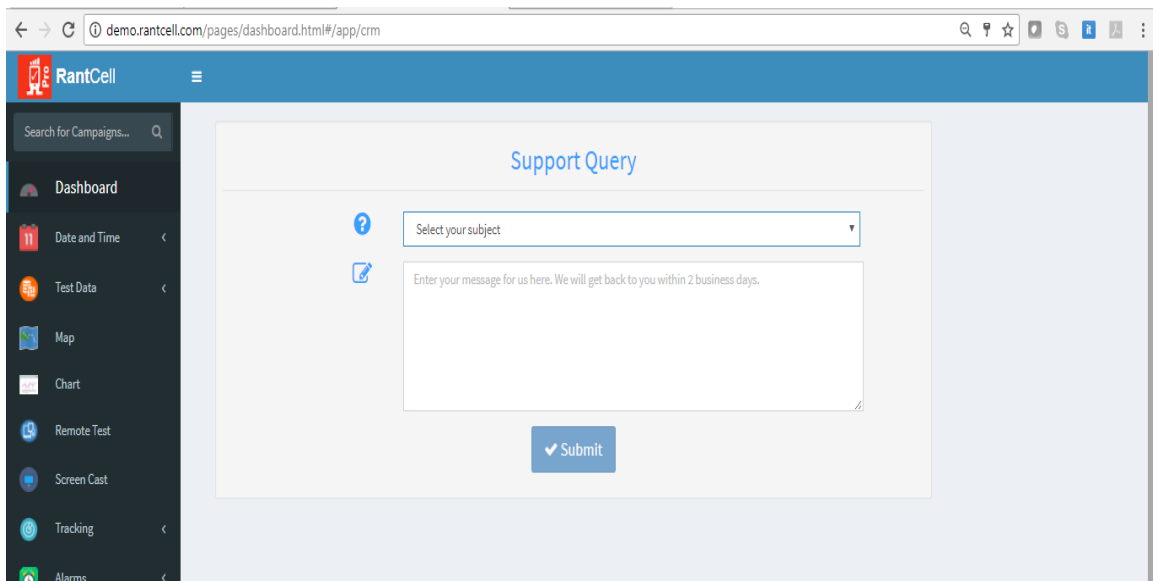
- Login**: Includes fields for 'Email' and 'Password'. The password field shows 'Last changed Time on None' and a 'Change Password' link.
- Personal**: Includes fields for 'Name and surname', 'Company', 'Address' (with an 'Update' link), 'PostCode/Pincode', 'Country', and 'Phone' (with an 'Update' link).

On the right side, there is a vertical menu with 'Account Settings', 'FAQ', 'Support', and 'Logout' options.



### Support:

User can raise support request query related RantCell Enterprise App and Web Dashboard online via this form. The query will be addressed by RantCell Support Team.





## 8. Applications

RantCell can be used for measuring the most important KPI's in Field testing. Few of the most important uses are mentioned below:

Mobile Operators	<p>RantCell can be used as a field test tool to test the network performance such as through puts, call setup times, latency and KPI's such as call setup success rate etc.</p> <p>Static tests to benchmark 24 hours performance of busy sites.</p> <p>Rantcell can be used as load generator when multiple call test apps run concurrently on different devices.</p> <p>Verification of services on cell sites and acceptance testing (Macro Cells, Small Cells and LTE Cells etc.).</p> <p>RantCell measures user experience during mass events. For example ongoing football match.</p> <p>Comparison of performance with other operators.</p> <p>Benchmark different UE category performance on network. (For Example: Dual Cell HSPA+ vs Single Carrier HSPA).</p>
Equipment Vendors	<p>As a benchmarking tool in RAN test labs.</p> <p>As a load generator against the RAN test beds (LTE, 3G and Small Cells).</p> <p>As a field test tool.</p>
Device Manufactures	<p>Rantcell App can be installed on various android devices for device performance and validation of tests</p> <p>Benchmarking of devices against different technologies (GSM, GPRS, UMTS, HSPA+, LTE ,LTE-A and Wi-Fi).</p> <p>Benchmarking of device performance against different UE software versions.</p>
Small Cells	<p>RantCell can be used as field testing tool by integration engineers to test cell performances.</p> <p>Site acceptance testing.</p> <p>Troubleshooting of cell issues.</p>



## 9. [RantCell Enterprise Supported Devices](#)

Click on following link for viewing RantCell Supported Devices: <https://rantcell.com/rantcell-supported-devices.html>

Device Brand	Model Name	Network Technology
Compal	Compal PMT3287_3G	GSM / HSPA
HTC	HTC Amaze 4G	GSM / HSPA
HTC	HTC One_M8	GSM / HSPA / LTE
HTC	HTC One_M8 Dual Sim	GSM / HSPA / LTE
HTC	HTC One M9	GSM / HSPA / LTE
HTC	HTC One	GSM / HSPA / LTE
HTC	HTC One Dual Sim	GSM / HSPA
HTC	HTC One Mini	GSM / HSPA / LTE
HTC	HTC One Mini 2	GSM / HSPA / LTE
HTC	HTC One Max	GSM / CDMA / HSPA / LTE
HTC	HTC One S	GSM / HSPA
HTC	HTC One SV	GSM / HSPA / LTE
HTC	HTC Desire V	GSM / HSPA
HTC	HTC Desire VC	GSM / CDMA / EVDO
HTC	HTC Desire 200	GSM / HSPA
HTC	HTC Desire HD	GSM / HSPA
HTC	HTC Desire HD A9191	GSM / HSPA
HTC	HTC Desire VCT328d	GSM / CDMA / EVDO
HTC	HTC Desire 200	GSM / HSPA
HTC	HTC Desire 310	GSM / HSPA
HTC	HTC Desire 210 Dual Sim	GSM / HSPA
HTC	HTC Desire 516 Dual Sim	GSM / HSPA
HTC	HTC Desire 600 Dual Sim	GSM / HSPA
HTC	HTC Desire 626G Dual Sim	GSM / HSPA
HTC	HTC Desire 816 Dual Sim	GSM / HSPA
HTC	HTC Desire 820Q Dual Sim	GSM / HSPA / LTE
HTC	HTC Desire 826 dual sim	GSM / HSPA / LTE
HTC	HTC Butterfly S	GSM / HSPA / LTE
HTC	HTC DROID DNA	GSM / CDMA /EVDO / HSPA / LTE
HTC	HTC Incredible S	GSM / HSPA
HTC	HTC Sensation 4G	GSM / HSPA
HTC	HTC Sensation Z710e	GSM / HSPA
HTC	HTC Sensation XE with beatsAudio Z715e	GSM / HSPA
HTC	HTC Evo 3D X515m	GSM / HSPA





HTC	HTC HTC_603h	GSM / HSPA
HTC	HTC 709d	GSM / CDMA / HSPA
HTC	HTC_D820u	GSM / HSPA / LTE
HTC	HTC_D816x	GSM / HSPA
HTC	HTC J Butterfly HTL23	GSM / HSPA / LTE
HTC	HTC6525LVW	GSM / HSPA / LTE
HTC	HTC6600LVW	GSM / HSPA / LTE
HTC	HTC One M8 Harmon/Kardon HTC 831C	GSM / HSPA / LTE
HTC	HTC One E9+ (HTC_E9pw)	GSM / HSPA / LTE
HTC	HTC_OP6B	GSM / HSPA / LTE
HTC	HTC_OP6B6	GSM / HSPA / LTE
HTC	HTC Desire 510 (HTC OPCV1)	GSM / CDMA / HSPA / LTE
HTC	HTC One M9 (HTC_OPJA10)	GSM / HSPA / LTE
HTC	HTC DROID Incredible 4G LTE(HTC ADR6410LVW)	CDMA / EVDO / HSPA / LTE
HTC	HTC EVO 4G (HTC PC36100)	CDMA / EVDO
HTC	HTC Rhyme (ADR6330vW)	GSM / HSPA
HTC	HTC J (HTC ISW13HT)	GSM / HSPA / CDMA
Haier	Haier Andromax NC36B1H	CDMA / EVDO
Hisense	Hisense Smartfren Andromax AD6B1H	CDMA / EVDO
Hisense	Hisense Smartfren Andromax AD688G	CDMA / EVDO
Hisense	Hisense Smartfren Andromax NC36B1G	CDMA / EVDO / GSM
Huawei	Huawei Y210-0151	GSM / HSPA
FUJITSUF	FUJITSUF_01F	GSM / HSPA / LTE
Lenovo	Lenovo A6000	GSM / HSPA / LTE
Lenovo	Lenovo P70-A	GSM / HSPA / LTE
Lenovo	Lenovo Vibe Z2 (K920)	GSM / HSPA / LTE
LGE	LGE Optimus LG-D321	GSM / HSPA / LTE
LGE	LG G2 (LGE LG-D802)	GSM / CDMA / EVDO / HSPA / LTE
LGE	LG G2 Mini (LGE LG-D620)	GSM / HSPA / LTE
LGE	LG G3 (LGE LG-D850,LGE LG-D851,LGE LG-D855)	GSM / HSPA / LTE
LGE	LG Optimus L3 (LGE LG-E425G)	GSM / HSPA
LGE	LG Optimus G 4G (LGE LG-E976)	GSM / HSPA / LTE
LGE	LG Optimus G Pro (LGE LG-E980)	GSM / HSPA / LTE
LGE	LGE LG-F350K	GSM / HSPA / LTE
LGE	LGE KG-D390AR	GSM / HSPA / LTE
LGE	LG Volt (LGE LGLS740)	CDMA / LTE
LGE	LG Volt 2 (LGE LGLS751)	EVDO / LTE
LGE	LGE LGMS323	GSM / HSPA
LGE	LGE LGMS345	GSM / HSPA / LTE



LGE	LG Optimus F7 (LGE LG-LG870)	CDMA / LTE
LGE	LGE Nexus5	GSM / CDMA / HSPA / LTE
Motorola	Moto G (Motorola XT1032)	GSM / HSPA / CDMA / EVDO
Motorola	Moto G (Motorola XT1040)	GSM / HSPA / LTE
Motorola	Moto X (Motorola XT1055)	GSM / HSPA / LTE
Motorola	Moto X (Motorola XT1097)	GSM / HSPA / LTE
Motorola	Motorola MotoE2(4G-Lte)	GSM / HSPA / LTE
Motorola	Motorola Droid RAZR HD	GSM / CDMA / EVDO / HSPA / LTE
Motorola	Motorola Nexus 6	GSM / CDMA / HSPA / LTE
OnePlus	OnePlus A0001	GSM / HSPA / LTE
OnePlus	OnePlus ONE A2001	GSM / HSPA / LTE
OnePlus	OnePlus ONE A2003	GSM / HSPA / LTE
Samsung	Samsung S6 (SM-G920F)	GSM / HSPA / LTE
Samsung	Samsung Galaxy S4 (GT-I9515)	GSM / HSPA / LTE
Samsung	Samsung Galaxy Note 4 (SM-N910K, SM-N910C)	GSM / HSPA / LTE
Samsung	Samsung S5 LTE ( SM-901F)	GSM / HSPA / LTE
Samsung	Samsung Galaxy Note 3 Neo SM-N750S	GSM / HSPA / LTE
Samsugn	Samsung S7 (SM-G935F)	GSM/HSPA/LTE
Sony	Sony Xperia E (C1504)	GSM / HSPA
Sony	Sony Xperia M (C1905)	GSM / HSPA
Sony	Sony SP (C5302, C5303, C5306)	GSM / HSPA / LTE
Sony	Sony Xperia Z (C6602, C6603)	GSM / HSPA / LTE
Sony	Sony Xperia Z1 (C6903)	GSM / HSPA / LTE
Sony	Sony Xperia M2 (D2303)	GSM / HSPA / LTE
Sony	Sony Xperia M2 Aqua (D2403)	GSM / HSPA
Sony	Sony Xperia T2 Ultra dual sim (D5322)	GSM / HSPA
Sony	Sony Xperia E4g (E2003, E2006, E2053)	GSM / HSPA / LTE
Sony	Sony Xperia Z3 (D5803,D5833)	GSM / HSPA / LTE
Sony	Sony Xperia Z2 (D6502, D6503, D6543)	GSM / HSPA / LTE
Sony	Sony Xperia Z3(D6603, D6633, D6643, & D6616)	GSM / HSPA / LTE
Sony	Sony Xperia V (LT25i)	GSM / HSPA / LTE
Sony	Sony SO-01G	GSM / HSPA / LTE
Sharp	Sharp Aquos Crystal (Sharp 306SH)	CDMA / EVDO / LTE
TCL	TCL OWN S5030	GSM / HSPA / LTE
Xiaomi	Xiamoi Redmi Note 4G (HM NOTE 1S)	GSM / HSPA / LTE
Xiaomi	Xiaomi MI 3W	GSM / HSPA
Xiaomi	Xiamoi Redmi HM 1SW	GSM / HSPA
Yuphoria	Yuphoria YU5010	GSM / HSPA / LTE
Zebra	Zebra Technologies TC55	GSM / HSPA / LTE



Technologies		
ZTE	Zte Grand X Max+ (Z987)	GSM / HSPA / LTE
ZTE	ZTE Star II (S2007)	GSM / HSPA / LTE
ZTE	ZTE Grand SII	GSM / HSPA / LTE
ZTE	ZTE Z812	GSM / HSPA / LTE
ZTE	ZTE Blade Apex2	GSM / HSPA / LTE

## Rooted Devices

Device Name	Model	2G, 3G and 4G Support	Rooted Device Features
Samsung	Samsung S5 SM-G900F	Yes	User can restart device remotely using web dashboard User can change network technology using web dashboard User can turn ON / OFF device into Airplane mode web dashboard User can turn ON / OFF WI-FI using web dashboard
Samsung	Samsung S6 G920-F	Yes	User can restart device remotely using web dashboard User can change network technology using web dashboard User can turn ON / OFF device into Airplane mode web dashboard User can turn ON / OFF WI-FI using web dashboard



## 10. [Glossary](#)

Abbreviations	Description
APN	Access point network
CID	Cell Identity
ISP	Internet service provider
MCC	Mobile Country Code
MNC	Mobile Network Code
LAC	Location Area Code
TAC	Tracking Area Code
ECI	E-UTRAN Cell Identifier
eNodeB	E-UTRAN Node B
LCID	Logical Channel ID
PCI	Primary Cell Identity
PSC	Primary Scrambling Code
RTT	Round trip-delay Time
UL	Uplink Throughout
DL	Downlink Throughput
RSSI	Received Signal Strength Indication
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality
GSM	Global System for Mobile Communication
LTE	Long Term Evolution
CDMA	Code Division Multiple Access
WCDMA	Wideband Code Division Multiple Access
HSPA	High Speed Packet Access
UMTS	Universal Mobile Telecommunications System
HSDPA	High Speed Downlink Packet Access



## 11. [Appendix](#)

Network Parameters in RantCell:

MCC (Mobile Country Code)	Mobile Country Code is used in wireless telephone networks (GSM, CDMA, UMTS, etc.) to identify the country which a mobile subscriber belongs to Example: MCC value for UK is 234 & 235. It varies and depends on country.
MNC (Mobile Network Code)	Mobile Network Code is used to uniquely identify a mobile subscriber's network the Mobile Country Code is combined with a Mobile Network Code. Example for Operator like British Telecom: MCC and MNC value for UK is 234 & 0.
CID (Cell Identity)	Cell Identity shows the identification number returned by the cellular base station to which the device is currently connected. Depending on the network owner the cell ID may refer to the complete base station or a specific sector on a base station. If user is conducting a survey while driving (e.g. car or train) the Cell ID will change as your device disassociates and associates with different base stations during the journey. This information is reported to RantCell.
LAC (Location Area Code)	Each location area has unique number with network. This code is used to identify location of mobile subscriber.
TAC (Tracking Area Code)	Tracking Area Code indicates eNBID to which Tracking Area the eNBID belongs (per Cell) Unique within a PLMN16
ECI (E-UTRAN Cell Identifier)	E-UTRAN Cell Identifier is used to identify a cell uniquely within a Public Land Mobile Network (PLMN).
eNodeB (E-UTRAN NodeB)	An eNodeB is an element of an LTE Radio Access Network, or E-UTRAN. A HeNB performs the same function of an eNodeB, but is optimized for deployment for smaller coverage than macro eNodeB, such as indoor premises and public hotspots.
PSC (Primary Scrambling Code)	Primary Scrambling Code is available only on 3G (UMTS) network.
PCI (Physical Cell Identity)	Physical Cell Identity is mainly used by UE to decode physical layer data being transmitted by eNodeB. Cell ID in SIB1 is designed for eNodeB management within the core network, but this one is also used for UE to identify a specific cell in terms of RRC/NAS layer processing.
RSSI (Received Signal Strength Indication)	Received Signal Strength Indication is used to measure the power level that a RF device, such as Wi-Fi or 3G client is receiving from the radio infrastructure at a given location and time. Usually, the higher the RSSI the better the quality and speed of the communication through the radio segment. RSSI > -89dbm                      Signal quality is excellent RSSI < -90dbm & > -99dbm      Signal quality is good



	<p>RSSI &lt; -100 dbm &amp;&gt;-112dbm      Signal quality is average</p> <p>RSSI &lt;-113 dbm                              Signal quality is bad</p>
RSRP (Reference Signal Received Power)	<p>Reference Signal Received Power is the linear average of reference signal power (in Watts) across the specified bandwidth (in number of REs). This is the most important item to measure for cell selection, reselection and handover.</p> <p>RSRP &gt; -89dbm                              Signal received power is excellent</p> <p>RSRP &lt; -90dbm &amp;&gt; -99dbm              Signal received power is good</p> <p>RSRP &lt; -100 dbm &amp;&gt;-112dbm          Signal received power is average</p> <p>RSRP &lt;-113 dbm                              Signal received power is bad</p>
RSRQ (Reference Signal Received Quality)	<p>Reference Signal Received Quality is defined as <math>(N \times \text{RSRP})/\text{RSSI}</math>, where N is the number of RBs over the measurement bandwidth. As you see from the definition of RSSI, RSSI contains all sorts of power including power from co-channel serving and non-serving cells, adjacent channel interference, thermal noise, etc.</p> <p>RSRQ &gt; -7 dbm                              Signal received quality is excellent</p> <p>RSRQ &lt; -8 dbm &amp;&gt; -9 dbm              Signal received quality is good</p> <p>RSRQ &lt;-10 dbm                              Signal received quality is bad</p>
Network Data	This refers to 2G, 3G, 4G, Wi-Fi and CDMA network.
Network Operator Name	Example: Vodafone, T-Mobile etc.
Packet	A packet is the unit of data that is routed between an origin and a destination on the Internet or any other packet-switched network.
Throughput	Throughput is the amount of data that can be transferred over your Internet connection at one point in time.
Latency	This contributes to network speed.
RTT (Round Trip Time)	Round-Trip Delay Time (RTD) OR Round-Trip Time (RTT) is the length of time it takes for a signal to be sent plus the length of time it takes for an acknowledgment of that signal to be received. This time delay therefore consists of the propagation times between the two points of a signal.
Downlink (DL) Throughput	<p>This shows the most recent download speed (in Mbps) obtained during a Throughput test. User must have a test in progress, and have selected to conduct throughput tests for this to display a metric. Downlink speed contributes to the overall performance of the connection. User can manually set the frequency of the Throughput tests when starting a test. If user internet downloads speed is:</p> <p>Greater than 1.2 Mbps                      Speed is good</p> <p>Between 1.2 &amp; 0.4 Mbps                  Speed is average</p> <p>Less than 0.4 Mbps                          Speed is poor</p>
Uplink (UL) Throughput	This shows the most recent upload speed (in Mbps) obtained during a Throughput test. User must have a test in progress, and have selected to conduct throughput tests for this to display a metric. Uplink speed contributes

	to the overall performance of the connection. If user internet uploads speed is: Greater than 0.5 Mbps                      Speed is good Between 0.5 and 0.2 Mbps                Speed is average Less than 0.2 Mbps                          Speed is poor
Setup time	Duration between the time user has pressed call button to time user hears the first ring from called person. If the Setup Time is: Less than 4.5                                  Network Connectivity is good Between 4.5 and 8                            Network Connectivity is average Greater than 8                                  Network Connectivity is poor

Following are the network parameters capturing in GSM, LTE and CDMA Network.

- 2G Network- GPRS, EDGE
- 3G Network- UMTS, HSDPA, HSUPA, HSPA and HSPAP
- 4G Network-LTE
- CDMA Network
- All test logs are stored in Dynamo DB (no SQL) database.

GSM Device 2G and 3G Network	GSM Device 4G Network	CDMA Device CDMA Network
Operator Name	Operator Name	Operator Name
Data	Data	Data
MCC	MCC	MCC
MNC	MNC	MNC
CID	ECI and LCID	CDMA CID
LAC	TAC	CDMA SNR
RSSI/RSCP	RSSI	CDMA RSSI
PSC	NS	NS
Latitude	Latitude	Latitude
Longitude	Longitude	Longitude
ISP	ISP	ISP
NS	RSRP	NS
NS	RSRQ	NS
NS	PCI	NS
NS	eNodeB	NS

Note:    PSC value is available only in 3G Network  
    PCI Value is available only in 4G Network