

# 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
	1X300GB SAS (6.35cm	1X300GB SAS (6.35cm	2x300GB SAS (6.35cm
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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. App can be installed on any Android device which coverts 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.
- 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 <u>support@rantcell.com</u> for further information)..
- 9. Airplane mode toggle ON / OFF (Feature available on specific device, please contact <u>support@rantcell.com</u> 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 <u>support@rantcell.com</u> 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 <a href="mailto:support@rantcell.com">support@rantcell.com</a> for further information).
- 14. Support for remote trigger of ON/OFF of mobile data. (Feature available on specific device, please contact <u>support@rantcell.com</u> for further information).
- 15. Support for remote ON/OFF of Wi-Fi. (Feature available on specific device, please contact <u>support@rantcell.com</u> 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 <u>support@rantcell.com</u>.

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.



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Reset Password         Code has been see         email. Please enter of set new password         Image: Code here of the set new password         Image: Code here of the set new password         Image: Code here of the set new pass         Image: Code here of the set new pass      <	nt to your ode here and			Reset Password RantCell Reset Password has b updated. Please Login v updated passwor	word een vith your d.



## 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 <a href="mailto:support@rantcell.com">support@rantcell.com</a>.
- 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<br/>Example: {Company Name}.rantcell.com. Post that login into Admin RantCell Account.



Step 02 – Click on User management as shown below



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			Google	data ©2017 Google Terms of Use Report a map error		

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

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Confirm Password *	Confirm password
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Company*	Enter company name
Address	Address
	<i>A</i>
PostCode/Pincode*	Enter pin code
Mobile	Enter mobile number
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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.



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	Chart		
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\$	Settings		
2 2 2	Chart User Management Settings		



## 5. <u>Configuring and Executing New Tests on RantCell Enterprise App</u>

- 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<br/>"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<br/>post analysis or real time view via tracking.(Please ensure that Location settings under<br/>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.

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AS for GPRS Service       -         stst Name       -       -       -       -         etwork type       -       -       -       -         stat Associations       -       -       -       -         stat Name       -       -       -       -       -         stat State       -       -       -       -       -         stat State       -       -       -       -       -       -         state       -&lt;</td><td>ATA       MCC       MNC       ECI       TAC       RSS       PSC         12       404       45       354060       8176       NS       NS         12       1383       -96       -1-1       426         12       1383       -96       -1-1       426         12       1383       -96       -1-1       426         12       1383       -96       -1-1       426         12       1383       -96       -1-1       426         etwork type       LEE       LEE       -       -         etwork type       Service       -       -       -         stations       -       -       -       -       -         etwork type       -       -       -       -       -       -         stations       -       -       -       -       -       -       -       -         all Test       -</td><td>ATA       MOC       MMC       ECI       TAC       RSSI       PSC         12       1383       -96       -11       426         12       1383       -96       -11       426         12       1383       -96       -11       426         12       1383       -96       -11       426         12       1383       -96       -11       426         etwork type       LEE       LEE       -       -         etwork type       LEE       -       -       -         stat Mame       -       -       -       -         etwork type       -       -       -       -       -         etwork Operator       -       -       -       -       -       -         etwork Operator       -&lt;</td><td>ATA       MOC       MMC       ECI       TAC       RSSI       PSC         IE       404       45       354060       8176       NS       NS</td><td>ATA       MCC       MMC       ECI       TAC       RSSI       PSC         E       404       45       354060       8176       NS       N</td><td>ATA       MOC       MNC       ECI       TAC       RSS I       PSC         E       404       45       354060       8176       NS       NS       NS         12       1383       -96       -11       426         12       1383       -96       -11       426         12       1383       -96       -11       426         12       1383       -96       -11       426         14       ASt 6609       Bharti Airtel Ltd. 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	ping_2 623 B	2017-07-135	.46_ping.c	sv ×	



## 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<br/>based post analysis or real time view via tracking.(Please ensure that Location<br/>settings under Android is set to "GPS only" or "Device Only").Step 04:Check the test results and its details
- 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.

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DATA LTE	MCC 404	MNC 45	ECI 354060	TAC 8176	RSSI NS	PSC NS
LCID 12	eNBI 138	id f 3	RSRP -97	RSRQ -12		PCI 19
Netwo	rk type				LTE	
ISP	AS45	609 Bh	arti Airtel L	td. AS for	GPRS	Service
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## 5.3 Call Test

1048576 1048576

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<br/>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.

			4G +†	1 B	15:34
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Network Ope	rator			airtel	
DATA MCC LTE 404	2 MNC 45	ECI 354060	TAC 8176	RSSI NS	PSC NS
LCID eN 12 1:	IBID I 383	RSRP -97	RSRQ -12		PCI 19
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New Test     STAFT       Network Operator     airdel       DATA     MCC     MNC     ECI     TAC     RSSI     PSC       LTE     JABS     354060     B176     NS     NS       LCD     eNBID     SA4600     B176     NS     NS       LCD     eNBID     SA4600     B176     NS     NS       LCD     eNBID     AS45609     Bharti Airtel Ltd. AS for GPRS Service       Test     Name     Itel     Itel       Calltest     OK     Itel     Itel       Speed Test     Itel     Itel     Itel       Call Test     Itel     Itel     Itel       Network Operator     airtel     Itel       Data     MCC <mnc< td="">     CID     LAC       Network Operator     airtel     Itel       Data     MCC<mnc< td="">     CID     LAC       Network Operator     airtel     Itel       Data     MCC<mnc< td="">     CID     LAC       Network Operator     airtel     Itel       Data     MCC<mnc< td="">     CID     LAC       Network Operator     airtel     Itel       Data     MCC<mnc< td="">     CID     LAC       Network Operator     airtel       Data&lt;</mnc<></mnc<></mnc<></mnc<></mnc<>						F A	2	15:43
Network Operator       airtel         DATA       MCC       MCC       RSS       PSC         LCID       eNBID       RSRP       RSRQ       PCI         12       1383       -96       -11       245         Network type       UTE       UTE       UTE       UTE         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       UTE         Test       Calltest       0K       0K         Ping Test       0K       0K       0K         Speed Test       0       15/44       15/44         Call Test       18/10       15/44       15/44         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       15/44         Call Test       0       15/44       15/44         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       15/44         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       15/44         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       15/44         AG45609 Bharti Airtel Ltd. AS for GPRS Service       15/44       15/44         ISP       AS45609 Bharti Airtel Ltd. AS for GPRS Service       15/44         AG45609 Bharti Airtel Ltd. AS for GPRS Service       15/44       16/45	< ជ្អឹះ រ							
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## 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<br/>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.

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## 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

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#### 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.



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- 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. Configure Call Test by entering "B" party contact number and call duration time limit. Step 04: 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). Check test results and its details. Step 07:

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.

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LCID 12 Network ISP Host: 5 Packet Sent = 4, Round Min = 66 Ping te ~ Sp	eNBID 1383 (1)92 AS45609 E RESULTS ng Test (2,74,65,50 ( s: Received = 4 (3,274,65,50 ( s: Received = 4 (3,274,65,50 ( s: Received = 4 (3,274,65,50 ( s: Received = 4 (3,274,65,50 ( s: Avg = 76, M st succes eed Test	-95 -95 252.74.65.50 4, Lost = 0 (0 (ms): ax = 94 s rate: 1/1	RSRQ -10 LTE td. AS for GPR: DETAILS	PCI 426 S Servic

t	4G 👔 🛱	16.15
(1/1) alltest	TESTING	ý,
	-1-4-1	
DATA MCC MNC ECI	TAC RSSI	PSC
LCID eNBID RSRP	RSRQ	PCI 10
Network type	LTE	19
ISP AS45609 Bharti Airtel Lt	d. AS for GPR	Service
<ul> <li>Ping Test</li> </ul>		
Host: 52.74.65.50		
Reply: OK		
Stats: 4 sent, 4 received, 0 errors, 0	% loss	
RTT, MIII. 66 Avg. 76 Max. 94 Mide	20.10	
<ul> <li>Speed Test</li> </ul>		
Download L	Jpload	
Current: 372.711 Kbps 0.0	00 Kbps	
Average: 506.984 KDps 0.0	100 Kbps 100 Kbps	
DL Result:	00 Nbp3	
UL Result: Status 1:		37 %
	4G 🖌 🖻	16:20
		I 0.20
Network Operator	airtal	
DATA MCC MNC ECI	TAC RSSI	PSC
LTE 404 45 354060	8176 NS RSR0	NS PCI
12 1383 -98	-12	426
Network type ISP AS45609 Bharti Airtel Ltd	LTE I. AS for GPRS	Service
<ul> <li>Ping Test</li> </ul>		
lost: 52.74.65.50		
teply: OK	K	
Rats: 4 sent, 4 received, 0 errors, 0% RTT: Min: 66 Avg: 76 Max: 94 Mde	% ioss v: 10	
A Speed Test		
∽ Speed Test		
Download U	pload	
Current: 484.727 KDps 3.7	34 Mbps 34 Mbps	
Peak: 940.141 Kbps 3.73	34 Mbps	
DL Result: OK JL Result: OK		
Status 1: Done		
	4G 🦼 🖻	16.21
	EXPORT	-
Network Operator	airtel	•
DATA MCC MNC ECI	TAC RSSI	PSC
LTE 404 45 354060 LCID eNBID RSRP	8176 NS RSRO	NS PCI
12 1383 -94	-10	426
ISP AS45609 Bharti Airtel Lt	d. AS for GPR	S Service
RESULTS	DETAILS	
Download	Upload	
Peak: ↓ 942.97 Kbps ↑ 3.	74 Mbps	
File Size: 1.0MB	1.0MB	
Iterations: 1 Server: 52.74.65.50	1	
		$\wedge$

X		4G	16:14
< 🛿 (1/1) alltes	st	TESTING	×
Network Operator		airt	el
DATA MCC MNC	ECI	TAC RSS	PSC
LTE 404 45 LCID eNBID	354060 RSRP	8176 NS RSRO	NS PCI
12 1383	-96	-12	143
Network type	Rharti ∆irtel I	LTE td. AS for GPI	25 Service
Status 1: Done			
onardo n. Done			
<ul> <li>Call Test</li> </ul>			
Duration: 34			
Setup Time: 5			
Result: Success			
<ul> <li>Http Test</li> </ul>			L
Http Url: https://r	Http Test	n/1mb.txt	
Current:	76.883 Kb	ps	
Average:	68.883 Kb	ps	
Peak: 1 HTTP Result:	64.102 Kt	pps	
Status 1:		_	29 %
		4G	16:21
📴 alltest		EXPORT	<
Network Operator		airte	I
DATA MCC MNC	ECI	TAC RSS	PSC
LTE 404 45 LCID eNBID	354060 RSRP	RSRQ	PCI
12 1383	-94	-10	426
Network type ISP AS45609 B	harti Airtel Li	LTE d. AS for GPR	S Service
REQUITE		DETAILS	
RESULTS		DETAILS	
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<ul> <li>Speed Test</li> </ul>			
<ul> <li>Speed Test</li> <li>Call Test</li> </ul>			
<ul> <li>Speed Test</li> <li>Call Test</li> </ul>			
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>			
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>			
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>			
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<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>			s
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>		46 at 1	S
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Http Test</li> </ul>		46 an E	S
Speed Test     Call Test     Http Test		45 AL EXPORT	S 16:21
Speed Test     Call Test     Http Test     Http Test     alltest     Network Operator     DATA MCC MN	C ECI	45 ∦ <b>Export</b> airt TAC RSS	S 16:21
Speed Test     Call Test     Gall Test     Http Test     Http Test     Intervente Operator     Detra MCC MN LTE 400 45	C ECi → 354060	45 ▲ 1 EXPORT airt TAC RSS 8176 NS	S 16:21 C PSC NS PC
Speed Test     Call Test     Call Test     Http Test     Http Test     Itte 404     Itte 40	C ECI 354060 RSRP -94	45 ▲ 1 EXPORT airt TAC RSS 8176 NS RSRQ -9	S I 16:21 I C I PSC I PSC I PSC I PSC I PSC I PSC I PSC
Speed Test     Speed Test     Call Test     Http Test     Http Test     ditest     Network Operator     DATA MCC MN LTE 404 45     LCID eNBID     12 1383 Network type     Icp assessment	C ECI 354060 RSRP -94 Rhani Airdal	49 € EXPORT airt TAC RSS 8176 NS RSRQ 9 LTE LTE 11 4 S for ONE	si PSC PCS PCS PCS PCS PCS PCS PCS PCS PCS
Speed Test     Call Test     Call Test     Http Test     Http Test     Itte 404     Ast     LCID     ISP     As45609	C ECI 354060 RSRP -94 Bharti Airtel L	49 ⊿ L EXPORT airt TAC RSS 8176 NS RSRQ .9 LTE td. AS for GPI	S 16:21 el S PCI 426 RS Service
Speed Test     Call Test     Call Test     Http Test     Http Test     Intervente Operator     DaTa MCC MN LTE 404 45     LCID eNBID     12 1383     Network type     ISP A\$45609     RESULTS	C ECI 354060 RSRP -94 Bharti Airtel I	49 , √ EXPORT TAC RSS 8176 NS RSRQ -9 LTE td, AS for GPI DETAILS	S 16:21 S PSC PCI 422 RS Service
Speed Test     Call Test     Call Test     Http Test     Http Test     Intervente Operator     DaTa MCC MN LTE 404 45     LCID eNBID     12 1383     Network type ISP AS45609     RESULTS	C ECI 354060 RSRP -94 Bharti Airtel I	49 , 4 € EXPORT 34TT TAC RSS 8176 NS 8176 NS RSRQ -9 LTE td, AS for GPI DETAILS	S 16:21 S PCI 426 RS Service
Speed Test     Call Test     Call Test     Http Test     Http Test     Intervente Operator     DaTa MCC MN LTE 404 45     LCID eNBID     12 1383     Network type     ISP A\$45609     RESULTS	C ECI 354060 RSRP -94 Bharti Airtel I	49	S 1 16:21 S PSC PCI 426 RS Service
Speed Test     Call Test     Call Test     Http Test     Http Test     Itte 404     A5     LCID eNBID     12     1383     Network type     ISP AS45609     RESULTS	C ECI i 354060 RSRP -94 Bharti Airtel I	49 "A L EXPORT airt TAC RSS 8176 NS 8176 NS RSRQ -9 LTE LTE LTE LTE LTE LTE LTE LTE LTE LTE	S 1 16:21 S PCI 426 RS Service
Speed Test     Call Test     Call Test     Http Test     Http Test     Ide alitest     Network Operator     DATA MCC MN LTE 404 45     LCID eNBID     12 1383 Network type     ISP AS45609     RESULTS	C ECI 354060 RSRP -94 Bharti Airtel I	45 J EXPORT EXPORT airt TAC RSS 8176 NS RSRQ -9 LTE LTE LTE LTE LTE LTE LTE LTE LTE LTE	S 116:21 S PCI 426 RS Service
Speed Test Call Test Call Test Http Test Http Test Network Operator DATA MCC MN LTD eNBID 12 1383 Network type ISP AS45609 RESULTS	C ECI 354060 RSRP -94 Bharti Airtel I	45 ,	S 116:21 S PCI 426 RS Service
Speed Test Call Test Call Test Http Test Http Test Network Operator DATA MCC MN LTD eNBID 12 1383 Network type ISP A545609 RESULTS	C ECI 354060 RSRP -94 Bharti Airtel L	45 √ É EXPORT airt TAC RSS 8176 NS RSRQ -9 LTE LTE LTE LTE LTE LTE LTE LTE	S 1 16:21 S I PSC S PCI 426 RS Service
Speed Test Call Test Call Test Http Test Http Test Http Test Data Mccard Magnetic Ma	C ECI 354060 RSRP -94 Bharti Airtel I	45 a 2 EXPORT airt TAC RSS 8176 NS RSRQ -9 LTE LTE LTALS	S 116:21 C I I I I I I I I I I I I I
Speed Test Call Test Call Test Http Test Http Test Http Test Data Micro Mic	C ECI 354060 RSRP -94 Bharti Airtel I	46 A E EXPORT airt TAC RSS RSRQ -9 LTE td. AS for GPI DETAILS	S 16:21 C I I S PCI 426 RS Service
<ul> <li>Speed Test</li> <li>Call Test</li> <li>Call Test</li> <li>Http Test</li> <li>Http Test</li> <li>Http Test</li> <li>Atta Mcrath</li> <li>LCID eNBID</li> <li>12 1383</li> <li>Network type</li> <li>ISP AS45609</li> <li>RESULTS</li> <li>UL avg UL throw</li> <li>Call Test</li> </ul>	C ECI 354060 RSRP -94 Bharti Airtel L	46 / E EXPORT TAC RSS 6176 NS RSRQ -9 LTE td. AS for GPI DETAILS	S 16:21 C I S PCI 426 S S S S S S S S S S S S S
Speed Test Call Test Call Test Http Test Http Test Network Operator DATA MCC M LTE 404 45 LCID eNBID 12 1383 Network type ISP AS45609 RESULTS UL avg UL throw Call Test	C ECI 354060 RSRP -94 Bharti Airtel I Ughput <sup>ime</sup>	45 / EXPORT EXPORT TAC RSS 6176 NSS RSRQ -9 LTE td. AS for GPI DETAILS	S 16:21 C I S PCI 426 S S S S S S S S S S S S S

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Network Operator	airte	el
DATA MCC MNC ECI	TAC RSS	I PSC
LIE 404 45 35406	0 8176 NS	NS
12 1383 -95	-10	426
Network type	LTE	
ISP AS45609 Bharti Airte	Ltd. AS for GPR	S Service
RESULTS	DETAILS	
Call Setup Times (second Min = 5.001; Avg = 5.001; Max = Calls Attempted: 1 Calls Successful: 1 Calls Failed: 0 Call Success Rate: 100%	ds): 5.001	
RantCell Pro	<sup>46</sup> ,₁ 🖄	16:23
Network Operator		
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Network Oper	ator		airtel	
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LCID e	NBID RS	RP RSR	Q	PCI
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## 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 popsup.
- Step 02:In pop-up menu select Repeat Test to run same test which can be a single test or<br/>combination of more than one test and select start.



De Dan			4G +*	18	16:09
He Kan	tCell Pro	)			
Network Op	perator			airte	I
DATA MO	CC MNC	ECI	TAC	RSSI	PSC
LTE 40	eNBID	354060 RSRP	8176 RSRI	NS D	PCI
12	1383	-95	-10		143
Network ty	pe			LTE	0.0
New Test	S45609 Br t w Test	narti Airtei L	td. AS fo	r GPR	S Servici
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calltest 15 Jul 15:44				ted/up	
speedtes	t )				
<b>ping</b> 15 Jul 15:35					
Å			4G	13	16:06
(1/1)	) http		TEST	ING	
Network Op	erator			airtel	
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Network typ ISP AS	oe 645609 Bh	arti Airtel L	td. AS for	GPRS	Service
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Average: Peak: HTTP Result Status 1:	8: 19	7.039 Kbj 3.664 Kbj 9.961 Kb	ps ps ps	-	43 %
Average: Peak: HTTP Result Status 1:	8: 19	7.039 Kbj 3.664 Kbj 9.961 Kb	ps ps ps		43 % 16:08
Average: Peak: HTTP Result Status 1:	8: 19	7.039 Kbj 3.664 Kbj 9.961 Kb	ps ps ps 46 a expe		13 % 16:08
Average: Peak: HTTP Result Status 1:	erator	7.039 Kbj 3.664 Kbj 9.961 Kb	ps ps ps 4€ _t expe	A DRT airtel	43 % 16:08
Average: Peak: HTTP Result Status 1:	erator C MNC	2.039 Kb 3.664 Kb 9.961 Kb	46 at EXPE	A DRT airtel RSSI	43 % 16:08
Average: Peak: HTTP Result Status 1: Network Opp DATA MCt LTE 404 LCID	erator C MNC 4 45 eNBID	7.039 Kb 3.664 Kb 9.961 Kb 9.961 Kb 8.54060 RSRP	46 , 46 , 47 ,	2 DRT airtel RSSI NS	13 % 16:08 PSC NS PCI
Average: Peak: HTTP Result Status 1: Network Opt DATA MCt LTE 404 LTE 404 L20 12	erator C MNC 4 45 eNBID 1383	7.039 Kb 3.664 Kb 9.961 Kb 9.961 Kb 8.80 8.80 8.80 8.80 8.99 8.99	46 , ps 47 , ps 58 74C 8176 8176 8176 8176	DRT airtel NS	16:08 PSC NS PCI 19
Average: Peak: HTTP Result Status 1: Network Op DATA MCC LCID 12 Network typ ISP AS	erator C MNC 4 45 19 1383 e	7.039 Kb 3.664 Kb 9.961 Kb 9.961 Kb 354060 RSRP -99 arti Airtel Lt	46 J ps ps ps tac 8176 RSRQ -12 d. AS for	ORT NS LTE GPRS	13 % 16:08 PSC NS PCI 19 Service
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Http L Curre Averag Pei HTTP Status Status Netw DatA LCIE LCIE 12 Netw ISP	Rant Cell Pro       aird         DATA       MCC       MCC       ASS       associo       BTAC       RSS       PSC         DATA       MCC       MCC       ASS       SSCO       BTAC       RSS       PSC         LCD       assist       RSS       PSC       SSS       PSC       PSC         LCD       assist       RSS       PSC       PSC       PSC         LCD       assist       RSS       PSS       PSC       PSC         LCD       assist       RSS       PSS       PSC       PSC         LCD       PSC       LCD       TAC       RSS       PSC       PSC         LCD       Delete       Interview       LCD       Interview       Interview       Interview         PSC       Export as CSV       Interview       Inte					
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## 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<br/>pops up.

Step 02: In the pop up menu select delete test.

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## 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.

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## 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.









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## 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<br/>about Ping Test, Speed Test, Call Test and All Test to find detailed description to run<br/>tests.

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## 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 perfoming mobile to mobile call testing where in B-Party can answer the repeated call attempts by A-Party.









#### Enable / Disbale 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.
- It's recommended to select "GPS only" for accurate drive test results under Android settings (Settings -> Location -> ON and "Device only " or "GPS only")

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RantC	ell Pro	:
Network Ope	+	New Test
LTE 404 LCID 12		Settings
Network type	<b>6</b> 10	Send auto upload logs
New Test	ПP	Send logs to developer
Create a New	?	FAQ
15 Jul 16:05	1	Profile Details
calltest 15 Jul 15:44		Completed/uploaded
speedtest 15 Jul 15:40		Completed/uploaded
<b>ping</b> 15 Jul 15:35		Completed/uploaded

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						Please note that this will allow remote access from rantcell dashboard	✓

46 #	<b>2</b> 16:56
← Locating method	
High accuracy Uses GPS, Wi-Fi, and mobile networks to estimate your location	0
Power saving Uses Wi-Fi and mobile networks to estimate your location	0
GPS only Uses GPS to estimate your location	۲

#### 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 Serever and thus no data would be available for RantCell Dashboard for analysis.

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RantC	ell Pro	:
Network Ope DATA MCC	+	New Test
LTE 404 LCID	ţĻ	Settings
Network type	β.ŋ	Send auto upload logs
New Test	ſΩ.	Send logs to developer
Create a New	?	FAQ
http 15 Jul 16:05	1	Profile Details
calltest 15 Jul 15:44		Completed/uploaded
speedtest 15 Jul 15:40		Completed/uploaded
<b>ping</b> 15 Jul 15:35		Completed/uploaded





#### Allow Remote Access:

Enabling Remote Access alows 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.

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Network Ope DATA MCC	+	New Test
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New Test	80	Send logs to developer
Create a New	?	FAQ
<b>http</b> 15 Jul 16:05	1	Profile Details
calltest 15 Jul 15:44		Completed/uploaded
speedtest 15 Jul 15:40		Completed/uploaded
<b>ping</b> 15 Jul 15:35		Completed/uploaded

▼ 0.1 III III III	17:18
Settings	-
Auto-Answer Calls Please note that this will auto answer all your incoming calls	
Auto-Reply SMS Please note that this will auto reply all your incoming SMS from RantCell App	✓
Enable/Disable GPS logging Enable GPS to ensure location information is captured while testing	
Enable share data Share network information	✓
Allow remote access Please note that this will allow remote access from rantcell dashboard	✓

## 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 unavaialble.Starting function for reboot if network not avaialble 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 at19:36:1
Test is not running and network is unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg value is = ?Rsrg value is = ?
Logged at19:41:2
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 unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg 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 unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg 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 = ? Rsrg value is =?
Rsrp value is = ?
Logged at20:10:59
Test is not running and network is unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg value is = ?Rsrg 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 unavaiable.Starting function for reboot if network not avaiable 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 unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg value is = ?Rsrg 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 unavaialble.Starting function for reboot if network not avaialble after 5 minutes.And Rssi
value is = ? Rsrg 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 <u>support@rantcell.com</u> (RantCell Support Team). This is for support purpose to trouble shot and fix issues.

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Network Ope DATA MCC	+	New Test					
LTE 404 LCID 12	÷ ÷	Settings					
Network type	<u>6</u> 10	Send auto upload logs e					
New Test	<u>8</u> m	Send logs to developer					
Create a New	?	FAQ					
http 15 Jul 16:05	1	Profile Details					
calltest 15 Jul 15:44		Completed/uploaded					
speedtest 15 Jul 15:40		Completed/uploaded					
<b>ping</b> 15 Jul 15:35		Completed/uploaded					

# <u>6.5 FAQ</u>

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.

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RantC	ell Pro	:				
Network Ope	+	New Test				
LTE 404 LCID 12		Settings				
Network type	<b>6</b> 10	Send auto upload logs				
New Test	90	Send logs to developer				
Create a New	?	FAQ				
http 15 Jul 16:05	1	Profile Details				
calltest 15 Jul 15:44		Completed/uploaded				
speedtest 15 Jul 15:40		Completed/uploaded				
<b>ping</b> 15 Jul 15:35		Completed/uploaded				



# 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 <u>http://www.rantcell.com</u> or (CompanyName).rantcell.com (If Enterprise Server is provisioned)
- Step 02:User has to enter valid User ID and password to access RantCell Enterprise WebDashboard. In case of Enterprise customer user has to contact admin for credentials.

📴 RantCell		Home	How RantCell works	FAQ	Contact	Notes of the Cookyle play
		Lo	gin			
	Enter email or username					
	Enter password					
	Remember me					
	Forgot Password?		login			



# 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.



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🚱 Remote Test				100 - ≇≰	
Screen Cast			8	کت 50 -	
) Tracking				0	<u> </u>
🗿 Alarms			+	.7.01.19.12	3 <sup>233</sup>
Settings		Google	-	2021	Time
		Coogle	Map data ©2017 Google Terms of Use Report a map error		
		III List of Campaigns: July 19, 2	1017 16:33 - July 19, 2017 17:33 highlight o	ampaigns Search	🖹 Export All

### 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.

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-03	SHOULD	Google Napára 6217 begis Servición Apot anapara	- ing	⊕Remaining test minutes : 20000 ⊕Used test minutes : 100 ⊕Total test minutes : 300000	

### **Registered Devices:**

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

RantCell	1		RantCell	-		
Search for CampaignsQ.	20000		Search for Campaigns Q			
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Q Settings	Georgie werden 1217 begin Terraritan Approximation	Time		86250030307579	Wwg 1601	July 11, 2017 18:06



### Total Test Conducted:

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

RantCell			RantCell =	
Search for CampagenQ.	20000		Search for CampaignsQ	
Cashboard	29990 I Remaining fast Minutes Registered Devices	Total Test Conducted	Dashboard	
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() Settings	* =	2011 Dive	Q Settings	
	Go ge werden 5207 boge herre ofder Negorianse enn		96230033867579 Vito 3868 July 11, 2	2017 16:06

### **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.

RantCell	<u> </u>		RantCell =
Search for CompagesQ.	20000	50	Search for Campaigns. Q
Dashboard	Remaining Test Minutes Registered Devices	texa Tree Conducted	Dashboard
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### 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

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Search for Campaigns	۹		~~	~ ~				7						_		
Dashboard		2 Rer	99 naining	90 z Test	) Minut					1 Reg					50 Total Test Conducted Detected Networks	
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07/19/2017 07/19/2017	Su M	ю ти	We	Th	Fr 8	a	Su	Мо	ти	We	Th	Fr	Sa		50 -	
Apply Cancel	25 2	6 27	28	29	30	1	25	26	27	28	29	30	1			
	2 3	3 4	5	6	7	8	2	з	4	5	6	7	8			
	9 1	0 11	12	13	14 1	15	9	10	11	12	13	14	15		33233	
	16 1	7 18	19	20	21 2	22	16	17	18	19	20	21	22	+	-017.07.19 **	
	23 2	4 25	26	27	28 2	29	23	24	25	26	27	28	29	-	'p'' Time	
	30 3	1 1	2	3	4	5	30	31	1	2	3	4	5	Report a map error		
	U		List o	fCar	mpaie	ins:	July 19.	2017 1	6:33 - J	July 19.	2017 :	17:33		highlight cam	ioaions Search Ritisport All	_

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, RSSI/RSCP, ItePCI, IteRSRP, IteRSRQ, 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.



<b>2</b>	RantCell															
Searc	ch for Campaigns	Q		ing rest coverag	echart			RSSI/RSUP	_	St ing it	STRUKET	055				
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<b>(</b>	Alarms	<		Campaign Name	Test Name	Device	Itrns	Start	End	Мах	Ping Test(	ms) Avg	DLPeak	Speed	Test(Mbps)	
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reorritanie . e	JNTITLED		O Campaign N	ame : 40445_ai	tel	Device :	Vivo 1601					
Iterations : 1			🗂 Start Time : :	2017-07-19 13:0	2:27	🛱 End Ti	me : 2017-07-19 13	:03:23				
									Tab	Table View 🔻 Save		*
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Ping Te	St Host: www.g	ogle.com Resol	ved IP Address:	172.217.26.228	Average: 13	3 ms Minimum:	72 ms Maximum:	99 ms				
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6 N	IS	426	-107	-14		40445	airtel	airtel WIFI		8555	ОК	
4												
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🖕 Downloa	ad lest server	r: <u>52.74.65.50</u> Pe	ak: <mark>0 Mbps</mark> Avera	age: NaN Mbps								
Iteration	StartTime	EndTime	NoOfCor s	nnection Filesiz	e(bytes) T	FotalTime(s)	AvgDataRate(Mbp	PeakDa	taRate(Mbp	CellID	RSSI/RSCP	I
Iteration	StartTime 2017-07-19 13:02:43	EndTime 2017-07-1 13:02:45	NoOfCon s	nnection Filesiz	e(bytes) T	TotalTime(s)	AvgDataRate(Mbp:	PeakDa s) 0.00	taRate(Mbp	CellID NS	RSSI/RSCP	ľ

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



### RantCell



ble View														
$\sim$	Ping T	est												
<u></u>														
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

- 1. Using graph view user can check test results in Bar Graph or Donut Chart and compare results with all previous test results.
- 2. 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.
- 3. 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.



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Search for Campaigns Q	Lall Ping Test	Y Ping Test * X
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🔟 Date and Time <	100 - 9	
🔂 Test Data 🗸 🗸	8 50 -	
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Chart		
🕒 Remote Test		
Screen Cast		
	l	●TOTAL packet Recieved :100.00%
	#RSSI/RSCP between -90dBm and -90dBm :5.84% @RSSI/RSCP less than -113dBm :11.76%	●Successfull voice Calls ::00.00%







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### Graph View Coverage Chart

Coverage chart includes many parameters like RSSI, RSSI (CDMA), RSRP, RSRQ, CDMAEcNo, CDMASNR, 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



### Map View – Call Test







### Map View – Speed Test (Download Test)

Map View – Speed Test (Upload Test)





### Map View – HTTP Test



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



Map View – Coverage Map (RSRQ)



	♥ Map View			search			Search	RSRQ -	×
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Chart		ItePCI 350 IteRSRQ -6 Date 5/16/	2017		Tetbury		Cricklade H	Faring	gdon Star in the
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Tracking <		M49 Patchway	Yate Vate	A432		Lyneham	ton tett Wroughton		Lambour
Alarms <	Portishead		12	Castle	Combe A350	- ( ) / ·	Broad Hinton	A346	Lumbou

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.



3. 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

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



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•	Test Data	<	
	Мар		
22	Chart		
₿	Remote Test		
۲	Screen Cast		
0	Tracking	<	
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\$	Settings		

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<b>*</b>	Dashboard						
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<b>a</b>	Test Data			PantCall			
	Мар			Trancell /	Check Devices		
<u></u>	Chart				Schedule Test		
8	Remote Test				✓ Continuous Test > ✓ Live Tracking		
	Screen Cast				<ul> <li>Abort Tests &gt;</li> <li>Change Technology &gt;</li> </ul>		
0	Tracking				<ul> <li>Wifi Controls &gt;</li> <li>Airplane Mode &gt;</li> </ul>		
	Alarms				Restart Device		
\$	Settings						

### 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.

1	RantCell	≡			
•	Dashboard				
11	Date and Time				
•	Test Data		RantCell >	Run Test	
-22°	Chart		_	Check Devices Edit Group > Check Devices	
0	Remote Test			Continuous Test >	+ Add Continuous Test
	Screen Cast			X Abort Tests →     Change Technology →	<ul> <li>Delete Continuous Test</li> </ul>
٢	Tracking			Wifi Controls >	
0	Alarms			Restart Device	
	Settings				

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:

	RantCell	=	_		
			🖾 Continuous Test		
			Test Name *	UNTITLED	
			Deleu Betureu Teste *	r	da
		<	Detay Between Tests "	5	seconds
		<	Email Notifications	support@rantcell.com	+
			Select Interval *	15 minutes	•
2010			Default: 🗸	26: 36:	4G:
			Default		
			Ping Test: 🖌 Spe	ed Test: 🗸 Http Test: 🗸	Call Test: 🗹
		<			
		<			🔁 Run 🛛 Close

### 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.

		🛱 Continuous Test				
		Test Name *	UNTITLED			
		Delay Between Tests *	5			seconds
		<b>Email Notifications</b>	support@rant	tcell.com		+
		Select Interval *	15 minutes			Ŧ
	4	Default:	2G: 🖌	3G: 🗸		4G: 🖌
		2G				_
		Ping Test: 🔽 Spee	d Test: 🔽	Http Test: 🔽	Call Test	- 🖌
	4	3G Ping Test: 🗸 Spee	d Test: 🗸	Http Test: 🗸	Call Test	:
		4G				-
		Ping Test: 🗸 Spee	d Test: 🔽	Http Test: 🖌	Call Test	-
	4					
					🖄 Run	Close 3

### 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.

Ø	RantCell			
	rch for Campaigns			
	Dashboard			
11	Date and Time			
•	Test Data			
	Мар			Run Test
	Chart		🖀 RantCell 🔉	Check Devices
0	Remote Test			<ul> <li>Edit Group &gt;</li> <li>Schedule Test</li> </ul>
	Screen Cast			<ul> <li>Continuous Test &gt;</li> <li>Live Tracking</li> </ul>
6	Tracking			X Abort Tests >
0	Alarms			<ul> <li>Wifi Controls &gt;</li> <li>Aimlana Mada &gt;</li> </ul>
æ	Settings			Restart Device

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.

Ø	RantCell	≡			
~	Dashboard				
11	Date and Time				
6	Test Data				
<b>N</b>	Map Chart		🚰 RantCell 义	Run Test     Check Devices	
9	Remote Test Screen Cast			<ul> <li>Edit Group &gt;</li> <li>Schedule Test</li> <li>Continuous Test &gt;</li> <li>Live Tracking</li> </ul>	
٢	Tracking			Abort Tests >     Change Technology >     WEG 2 + 1 + 2	Abort Test     Abort Schedule Test
<u>ි</u>	Alarms			With Controls >     Airplane Mode >     Restart Device	
**	Strings				

# 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.

9	RantCell	=			
	ch for Campaigns				
	Dashboard				
11	Date and Time				
•	Test Data				
	Мар			😧 Run Test	
24	Chart		🖀 RantCell 👂	Check Devices	
0	Remote Test			Schedule Test	
	Screen Cast			<ul> <li>Continuous Test &gt;</li> <li>Live Tracking</li> </ul>	
0	Tracking			X Abort Tests → S Change Technology →	
0	Alarms			<ul> <li>♥ Wifi Controls &gt;</li> <li>★ Airplane Mode &gt;</li> </ul>	Toggle ON/OFF
	Settings			C Restart Device	

### 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:

Ø	RantCell		=		
Sea	rch for Campaigns	۹			
•	Dashboard				
11	Date and Time				
6	Test Data				
	Мар				Run Test
	Chart			🖀 RantCell 🔉	Check Devices
0	Remote Test				<ul> <li>Edit Group &gt;</li> <li>Schedule Test</li> </ul>
	Screen Cast				<ul> <li>Continuous Test &gt;</li> <li>Live Tracking</li> </ul>
0	Tracking				✗ Abort Tests → ✿ Change Technology →
0	Alarms				<ul> <li>♥ Wifi Controls &gt;</li> <li>ズ Airplane Mode &gt;</li> </ul>
	Settings				C Restart Device
			Copyright © 2014-2017 Me	gronTech. All rights reserved.	

# Devices Device Id Status I Xiaomi Redmi Note 861645035458801 Success, device will be rebooted in 30 secs • 3 Close

### 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 <u>support@rantcell.com</u> 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

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



• Tracking	office test	Xiaomi Redmi Note 4			
♀ Map View	I Table View				
♥ Map View	search		Search	DATA_TYPE -	-
Map Satellite		Office test Operator 40486 Operator Name Vodafone IN LAC NS Coordinate 12:90193154/77.56110265 DATA WIF Device Xiaomi Redmi Note 4 ISP_ID 1035.134.27 ISP AS55947 Bangalore Broadband N ISP_COINTRY IN ISP_REGION Karnataka Date 10:05/2017 TimeStamp 17:53:51	>	Pavan Tours and et	

# 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.

RantCell		≡							
Search for Campaigns.		O Alarms : July 17, 2	2017 18:48 - July 20, 2017 18:48	1		search		Search	Export All
💼 Test Data	<	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
📷 Мар		Read timed out	S7	UploadTest	2017-07-20 12:34:49	2017-07-20 12:35:01	23430_EE	6774785	1
Chart		Read timed out	\$7	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
🕒 Remote Test		Read timed out	S7	UploadTest	2017-07-18 23:30:19	2017-07-18 23:30:43	23430_EE	NS	3
Screen Cast		Read timed out	\$7	UploadTest	2017-07-18 23:32:29	2017-07-18 23:32:49	23430_EE	NS	4
Screen case		Read timed out	S7	UploadTest	2017-07-18 23:34:29	2017-07-18 23:34:49	23430_EE	NS	5
O Tracking		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
O Alarms									
Last 6 Hours									
Last 12 Hours									
Last 24 Hours									
🔴 Last 3 Days									
🛗 Custom Date									
🔅 Settings		4							÷
		Load more							

# 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.

ĝ	RantCell	=	I		
Sear		٩	🗘 Parar	noter Threshold settings	
	Dashboard			neter meshold settings	
11	Date and Time	<	RSSI	/RSCP	
6	Test Data	<	dBm	setting	lcons
	Мар			Greater than equal to -89	•
22	Chart			Between -90 and -99	•
9	Remote Test			Between -100 and -112	•
	Screen Cast			Less than equal to -113	•
٢	Tracking	<	RSRI	p	
0	Alarms	<	dBm	setting	Icons
\$	Settings			Greater than equal to -89	•
				Between -90 and -99	•
				Between -100 and -112	•

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Ra	ntCell		=				sreenivas.midatala@megrontech.co.
Search for C	Campaigns	Q	Uf	ipload Test		ICOIIS	
💌 Das	shboard			Greater than equal to 0.5 mbps		0	
1 Date	e and Time			Between 0.49 mbps and 0.2 mbps		0	
Test I	: Data			Less than 0,2 mbps		0	
Char	rt		Mo Da	obile network coverage type Data Type		lcons	
9 Rem	note Test			4G Network		•	
Scree	een Cast			3G Network		0	
Track	king:			2G Network		29	
3 Alam	ms			Wi-Fi		•	
🛠 Setti	ings			CDMA Network		-	
				Save Settings	DefaultSettings		
			Copyright © 2014-2017	17 MegronTech. All rights reserved.			Version

### 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.

	RantCell	=			
Searc			Account Se	ettings	
-	Dashboard				
Ĩ	Date and Time		+) Login		
•	Test Data		Email :		
	Мар		Password :	Last changed Time on None	Change Password
22	Chart				
0	Remote Test		¥ Personal		
	Screen Cast		Name and surname :		
٢	Tracking		Company :		
0	Alarms		Address :		<b>I</b> Update
\$	Settings		PostCode/Pincode :		
			Country :		
			Phone :		🕼 Update

						Ŀi
9	RantCell	=				
Sean	ch for Campaigns Q		Name and surname :		<ul> <li>Account Settings</li> <li>FAO</li> </ul>	
	Dashboard		Company :		Support	
11	Date and Time <		Address :	I Update €	O Logout	
•	Test Data 🗸		PostCode/Fincode :			
	Мар		Country:			
21	Chart		Phone:	☑ Update		
9	Remote Test		TimeZone :			
	Screen Cast					
٢	Tracking <		NYour current subscription			
$\overline{\mathbf{O}}$	Alarms <		Your subscription type :			
\$	Settings		Next renewal date/Evniry date *			
			Back			
		- ····· - ·	an + + +			

### 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.

<del>(</del>	C 🛈 demo	.rantcel	om/pages/dashboard.html#/app/crm	Q T 🕁 🚺 🚺 🗷 🗵
ġ	RantCell		E	
Sear	ch for Campaigns		Support Quary	
	Dashboard		Support Query	
n	Date and Time		Select your subject	T
•	Test Data		Enter your message for us here. We will get back to yo	ou within 2 business days.
	Мар			
<u></u>	Chart			
9	Remote Test		✓ Submit	
۲	Screen Cast			
0	Tracking			
	Alarms			



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



# 9. <u>RantCell Enterprise Supported Devices</u>

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

Device Brand	Model Name	Network Technology
Compal	Compal PMT3287_3G	GSM / HSPA
HTC	HTC Amaze 4G	GSM / HSPA
НТС	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
НТС	HTC Desire VC	GSM / CDMA / EVDO
HTC	HTC Desire 200	GSM / HSPA
НТС	HTC Desire HD	GSM / HSPA
HTC	HTC Desire HD A9191	GSM / HSPA
НТС	HTC Desire VCT328d	GSM / CDMA / EVDO
HTC	HTC Desire 200	GSM / HSPA
НТС	HTC Desire 310	GSM / HSPA
НТС	HTC Desire 210 Dual Sim	GSM / HSPA
НТС	HTC Desire 516 Dual Sim	GSM / HSPA
НТС	HTC Desire 600 Dual Sim	GSM / HSPA
НТС	HTC Desire 626G Dual Sim	GSM / HSPA
НТС	HTC Desire 816 Dual Sim	GSM / HSPA
НТС	HTC Desire 820Q Dual Sim	GSM / HSPA / LTE
НТС	HTC Desire 826 dual sim	GSM / HSPA / LTE
НТС	HTC Butterfly S	GSM / HSPA / LTE
HTC	HTC DROID DNA	GSM / CDMA /EVDO / HSPA / LTE
НТС	HTC Incredible S	GSM / HSPA
НТС	HTC Sensation 4G	GSM / HSPA
НТС	HTC Sensation Z710e	GSM / HSPA
НТС	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
НТС	HTC6600LVW	GSM / HSPA / LTE
HTC	HTC One M8 Harmon/Kardon HTC 831C	GSM / HSPA / LTE
НТС	HTC One E9+ (HTC_E9pw)	GSM / HSPA / LTE
НТС	HTC_OP6B	GSM / HSPA / LTE
НТС	HTC_OP6B6	GSM / HSPA / LTE
НТС	HTC Desire 510 (HTC 0PCV1)	GSM / CDMA / HSPA / LTE
НТС	HTC One M9 (HTC_0PJA10)	GSM / HSPA / LTE
НТС	HTC DROID Incredible 4G LTE(HTC ADR6410LVW)	CDMA / EVDO / HSPA / LTE
НТС	HTC EVO 4G (HTC PC36100)	CDMA / EVDO
НТС	HTC Rhyme (ADR6330vW)	GSM / HSPA
НТС	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	Rooted Device Features
		Support	
Samsung	Samsung S5 SM-	Yes	User can restart device remotely using web
	G900F		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	Yes	User can restart device remotely using web
	G920-F		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. <u>Glossary</u>

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. <u>Appendix</u>

Network Parameters in RantCell:

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



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