AZQ Android 3.0 User's Manual

RC4: 25 August 2014

AZENQOS

Contents

What's new in AZQ Android version 3.0.1

- **Background Mode**

  User can now switch to conduct other activities while recording, this allows for radio parameter collection of other apps such as OOKLA speedtest and games

- **Live Layer 3 Messages Display**

  User can now view Layer 3 messages and its content live on the phone

- **Youtube Testing**

  Scripted testing of Youtube will now open a Youtube vdo, recording KPIs such as buffer time and data transfer rate

- **Speedtest Service Testing**

  Scripted testing of Speedtest will now open the speedtest app allowing user to collect radio parameter in the background

- **Multi-RAB Testing**

  Scripted testing of simultaneous voice & data

- **Google Maps Navigation**

  Users can use Google maps navigation during drive test

- **Cell Display**

  Users can import cell files into AZQ and display them on the map during drive test

- **Split Panel**

  Users display 2 data sets at the same time while testing

- **New Indoor Marking Method**

  Indoor marking has been completely redone for more convenient walk testing

- **Cell Locking**
  LTE PCI/ EARFCN/Band Locking, WCMDA SC Stay in dedicated mode/UARFCN/Band Locking, GSM Band Locking in selected devices. (Nexus 5,Samsung Galaxy S5 SM—G900F)

AZQ Android overview

Pre-test preparation (For beginners)

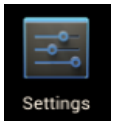
To ensure a stable and smooth operation of AZQ please make sure that the following conditions has been checked

1. The APN is correctly set for the test

In modern smart phones, APN must be properly set before data operations can be made, in any test cases special APN are required for the testing and must be set beforehand

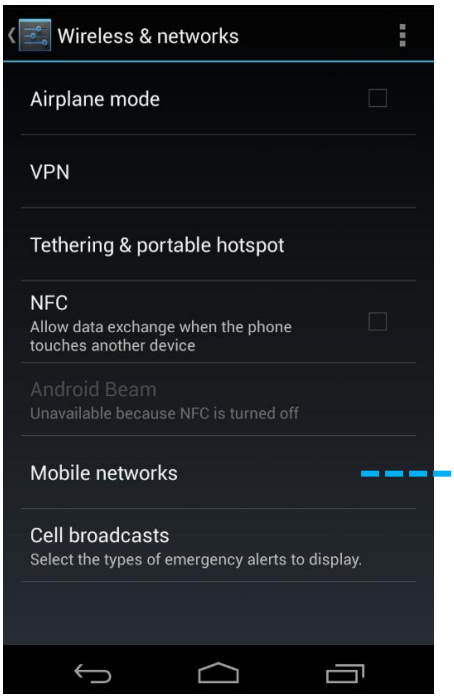
To setup APN

- Go to the phone's setting

in Android 2.3 or 

in newer versions of Android

- Go to Wireless & networks and choose Mobile networks



Select Mobile networks

- Choose Access Point Names and choose your APN accordingly

Select the correct network mode

Be mindful of the nature of the test. It might requires 2G only, 3G only, 4G only or automatic network parameter recording, to choose the one appropriate to the test, go to Mobile Networks and choose network mode

Check phone's data storage

If the phone's data storage is less 200 MB then no script can be started. Please delete unnecessary applications & images. If your phone is using an external SD card and it's showing 0.0 available space, the SD card might be defective

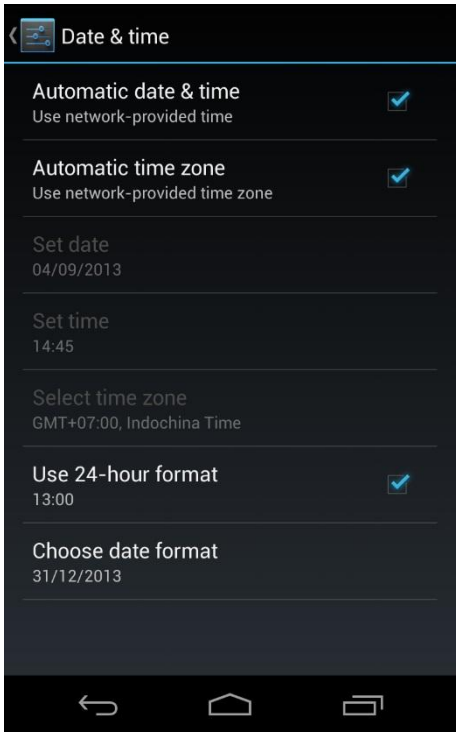
Check system clock

Correct date & time ensures that the log will come up on the server correctly

To setup the clock

- Go to the phone's setting and select Date & Time

- Select Automatic Time zone, Automatic date & time



AZQ File Locations

Below are the location where AZQ stores its files

Test Script

Located at sdcard/AZQ.script

Test Schedule

Located at sdcard/AZQ.schedule

Log files

Located at sdcard/diag_logs

Cell files

Located at sdcard/AZQ.cellfiles

Grid files

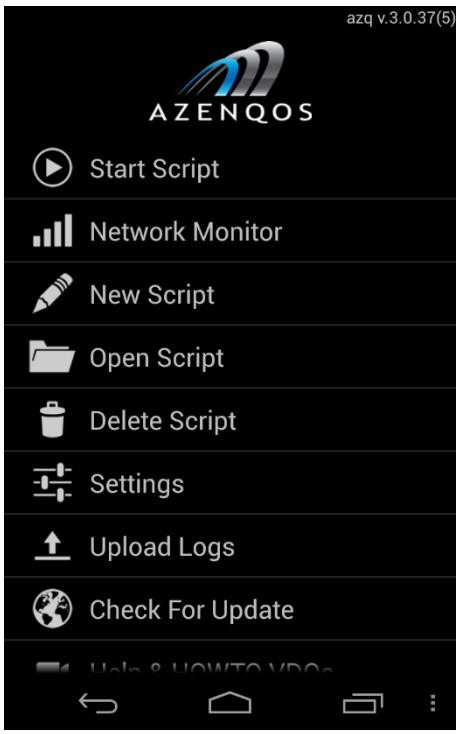
Located at sdcard/AZQ.gridfiles

Launching AZQ

Locate and tap on the AZQ icon to launch AZQ

AZQ Main menu

Once AZQ has finished launching, you will be greeted with the menu screen



Current AZQ version

Start Script

Run and record a pre-configured script.

Network Monitor

Run an idle script which will not be recorded by AZQ

Open Script

Open a pre-configured script to edit

Delete Script

Delete a pre-configured script

Settings

User can set automatic test characteristics, import cell file, manage audio warnings etc.

Upload logs

Upload recorded log to the AZQ server

Manage Logs

View or download uploaded logs from the AZQ server

Bluetooth

Enter a Bluetooth test mode where one Android Tablet can control multiple AZQ devices

Check for Update

Check with AZQ central server for new software version. Please note that while you can update AZQ, you must never update the phone's firmware! This will cause AZQ to stop functioning and might void our software warranty!

Help & HOWTO VDOs

Open our support page where various VDOs and guides can be found

Technical Support

Directly email our support desk with your questions, please remember to fill in the form with your inquiries

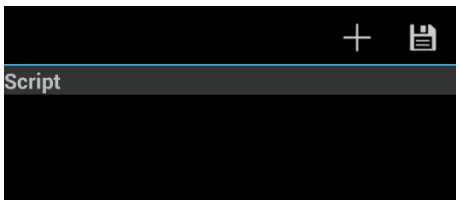
Script Creation

Script allow users to setup and execute a sequence of pre-determined statements such as Voice call, FTP download and FTP upload on the phone. Once a script has been created you can initiate it via "Start Script" on the main menu.

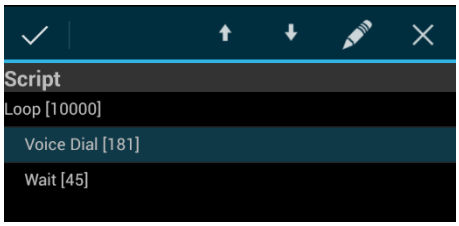
To create a script, go to AZQ main menu and enter “New Script”

Navigation and the importance of loop

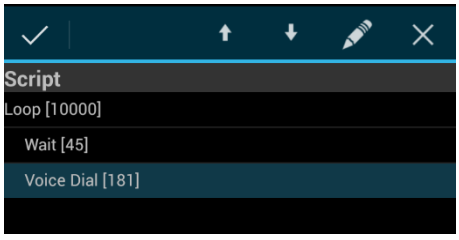
Once you enter “New Script” You will be able to add a new statement by tapping the  icon, scripts can be saved by tapping the 



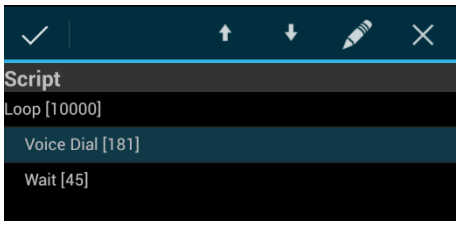
You can also edit an existing statement by tapping on that statement to bring up the edit menu. In this example, Voice Dial is tapped and the edit menu is displayed



Pressing  Will move the current statement down and make Voice Dial happens after Wait, as shown in the next image



Likewise, tapping  will move the current statement up and make Voice Dial happen before the wait statement as in the original script as shown in the next image



Tapping  will allow the user to edit the Voice Dial script

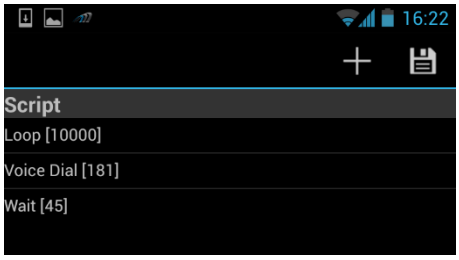
Tapping  will save the changes made to the script

Tapping  will delete the statement from the script

Importance of loop

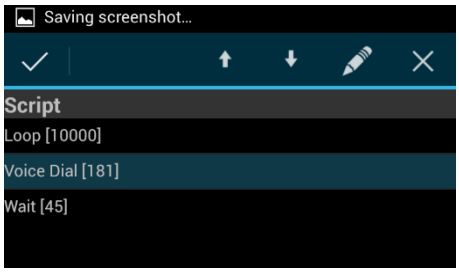
Loop allows a statement within the loop to be repeated automatically, this generally means that the user need to start the script only once during a drive. However, incorrectly setting the loop means that script will only execute a statement once before ending, thus requiring the user to start script again. It can be very tiring so we better get this right the first time

Below is an example of an incorrect loop setup

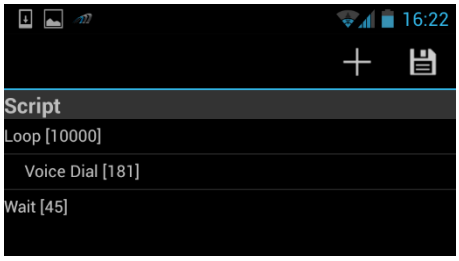


Starting this script means that the Voice Dial will happen once, followed by 45 seconds idle time, then the script will end. This is because the Voice Dial and Wait are not in the loop! To setup a correct loop, please follow these steps

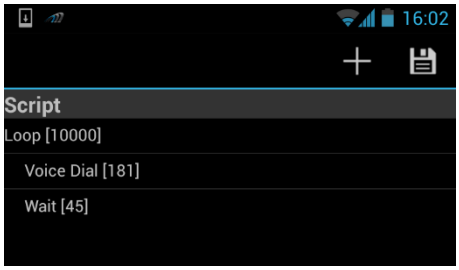
- Tap on Voice Dial to bring up the edit menu



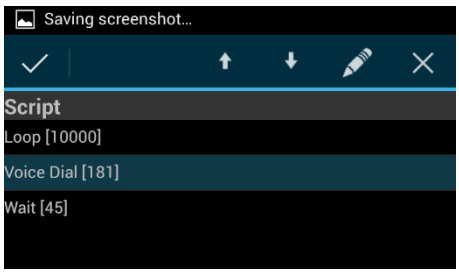
- Tap  to move Voice Dial into the loop, notice that voice dial is now moved to the right and into the loop, if this script is started now, Voice Dial will be repeated 10,000 times



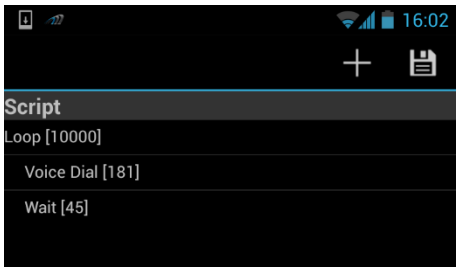
- Repeat the procedure with the Wait Statement



The loop is now setup correctly and starting it will make the phone execute Voice Dial followed by wait for 10,000 times or until the user ends the test



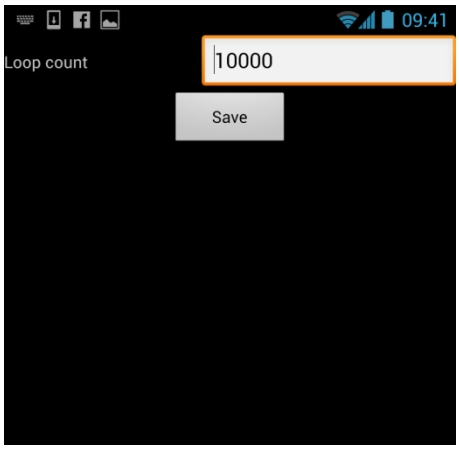
---------- WRONG



RIGHT

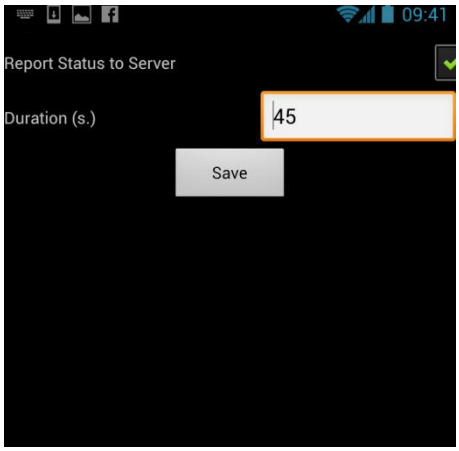
By tapping the  icon, a list of statements will be displayed; the user can then tap a statement to add it into the script

Loop statement



Loop count: The number of times a script will repeat itself before ending, please keep in mind the importance of keeping statements in the loop

Wait statement

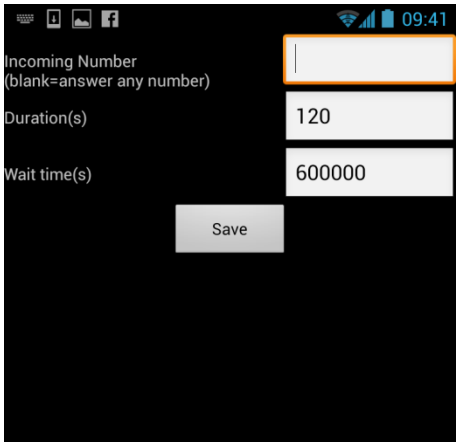


Wait will make the phone enters into idle mode, log will still be recorded during this time and the user can execute actions such as calls or use applications manually. Ideal for collecting coverage information

Report Status to Server: Enabling this will allow the phone to send its status (Location, Battery level, Type of test being done) back to the server when wait is being executed

Duration: The duration of the idle time

Answer statement



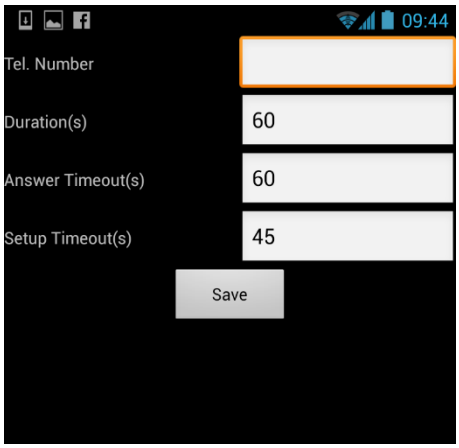
Answer will make the phone picks up incoming calls, if the answer statement is not active then incoming calls will be ignored unless the user manually picks up the call

Incoming Number: Specify the number of the incoming call that the phone will pick up. If left blank the phone will pick up calls from any number

Duration: The duration of the conversation after call has been picked up in seconds

Wait time: The duration of time the phone will wait for calls in idle mode before executing the next statement

Voice Dial statement



Voice Dial will make the phone initiate calls to the target number

Tel Number: The target number the phone will call to.

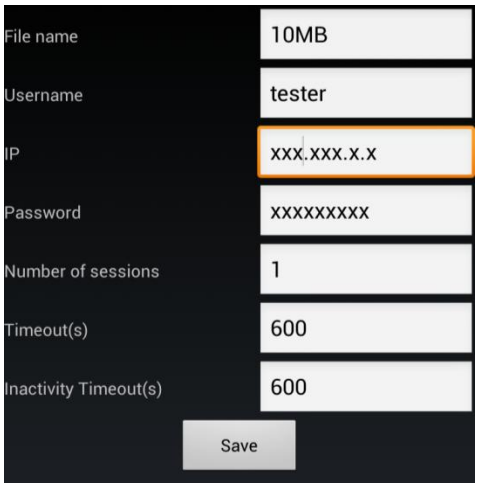
Duration: The duration of the conversation after call has been picked up on the receiving side.

Answer timeout: The duration of time (in seconds) the phone will wait for the call to be picked up after ringing has started

Setup timeout: The duration of time (in seconds) the phone will wait for the call to ring after it has been initiated on the caller side

FTP Download statement

FTP download will download a file from the target server, please note that the target file name must exist on the server for the download to be started



File name: Specify the file name to download, please make sure that it must follow the exact same convention (Capital letters, spacing) as the file name on the server

Username: User name for the FTP server

IP: IP of the FTP server

Password: Password of the FTP server

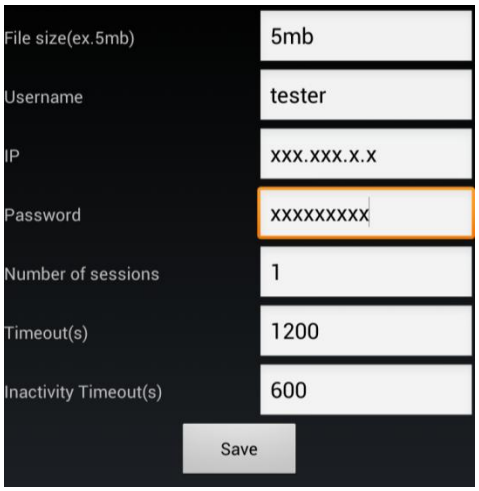
Number of sessions: The number of simultaneous download sessions

Timeout: Specify the download time before the FTP download is considered as failed

Inactivity Timeout: Specify the period of no data activity before the FTP download is considered as fail

FTP Upload statement

FTP upload will upload a randomly generated text string of the specified size to the target server.



File size: Specify the size of the file to upload, Please use lower case letter without spacing to specify the file size

Username: User name for the FTP server

IP: IP of the FTP server

Password: Password of the FTP server

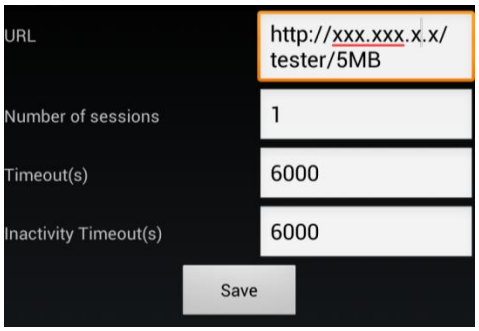
Number of sessions: The number of simultaneous downloads sessions

Timeout: Specify the download time before the FTP download is considered as failed

Inactivity Timeout: Specify the period of no data activity before the FTP download is considered as fail

HTTP Download statement

HTTP Download will download the target URL; this is not the same as browsing a web page



URL: The URL of the target web page

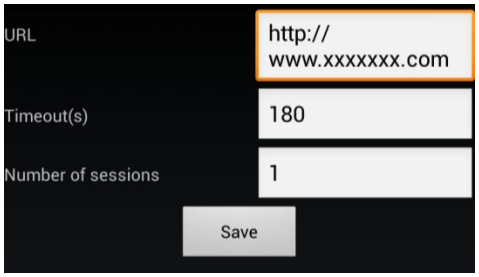
Number of sessions: The number of simultaneous downloads sessions.

Timeout: Specify the download time before the FTP download is considered as failed

Inactivity Timeout: Specify the period of no data activity before the FTP download is considered as fail

Browse statement

Browse will use the Android web browsing API to open a webpage and download the page's resources. Please note that Java script will not be downloaded



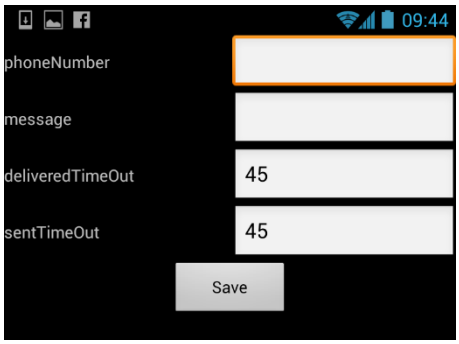
URL: The URL of the target web page to open

Number of sessions: The number of simultaneous open web page sessions

Timeout: Specify the download time before the FTP download is considered as failed

SMS statement

Android will send SMS to the specified number



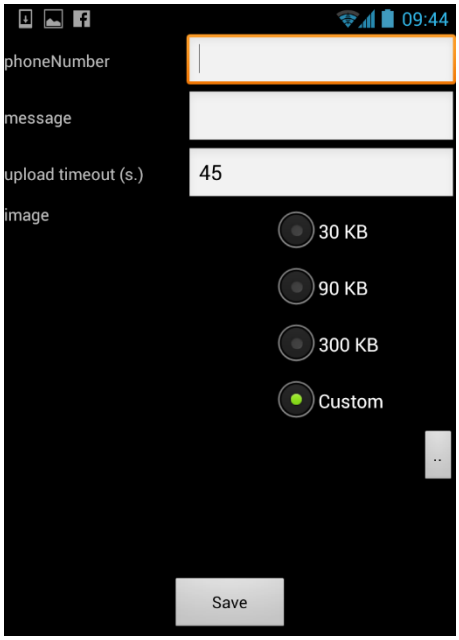
Phone Number: The SMS receiver's number

Message: The SMS message body (maximum 160 characters)
DeliveredTimeout: Specify the time period the application will wait for the delivery report to be returned before considering the test a failure

SentTimeout: Specify the period the application will wait for the sms send ack from the phone's API

MMS statement

Android will send MMS to the specified number, MMS can be sent in image only, animations and VDOs MMS are not allowed



Phone Number: The MMS receiver's number

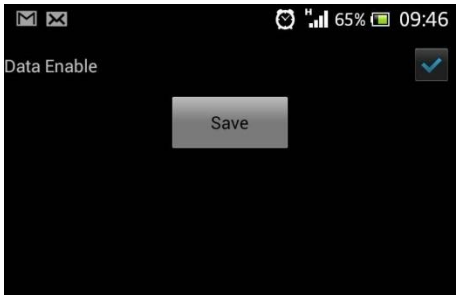
Message: The MMS message body (maximum 160 characters)

UploadTimeout: Specify the time period the application will wait for the MMS upload to be finished

Image: Choose from a pre-defined image or image from the photo gallery

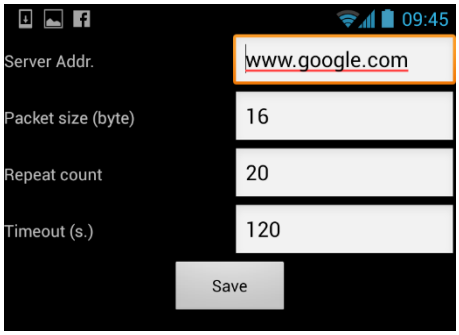
Data Enable statement

Android will enable/disable data service, check to enable and uncheck to disable



Ping statement

Android will ping to the target IP



Server Address: The IP of the address to be pinged

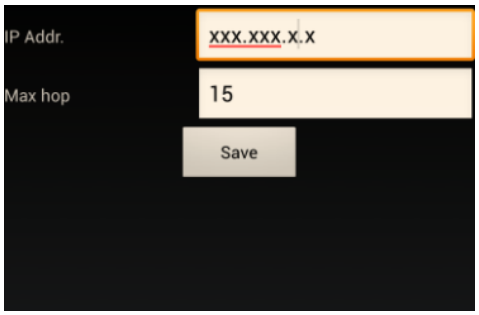
Packet size: The Ping packet size in bytes

Repeat Count: The number of times ping will be executed before moving to the next statement

Timeout: Specify the time period the application will wait for the Ping response

Trace Route statement

Android will trace route to the target IP



IP Address: The IP of the address to trace route to

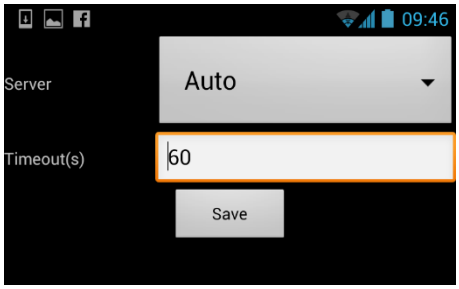
Max hop: Maximum number of hop for the trace route

Network mode statement

Android will force to a certain technology before executing the next statement, please note that this function is not supported on all phones.

OOKLA speedtest statement

Android will open OOKLA and conduct speedtest for the purpose of collecting radio parameter information, OOKLA speedtest must be installed on the phone and no other activities can be done while the test is underway

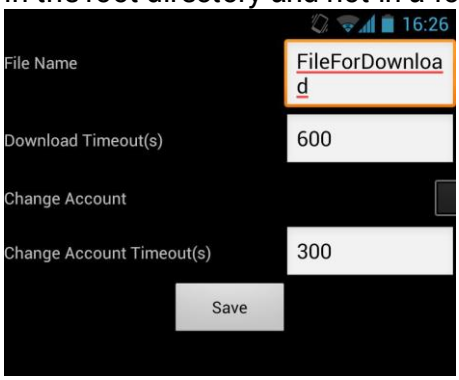


Server: The Speedtest server to use for the test

Timeout: Specify the time period the application will wait for the Speedtest to complete

DROPBOX download statement

AZQ will use the Dropbox API to conduct download test from a dropbox account, a valid Dropbox account and file is required for this test. File for download test must be placed in the root directory and not in a folder



File Name: Specify the file name to download, please make sure that it must follow the exact same convention (Capital letters, spacing) as the file name on Dropbox

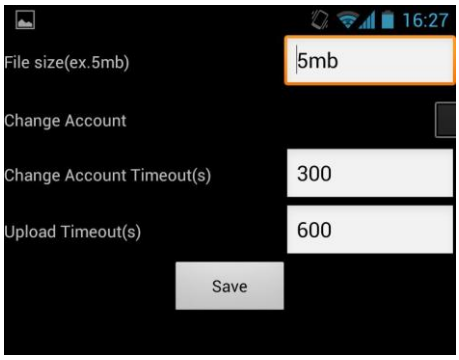
Download Timeout(s): Specify the download time before the FTP download is considered as failed

Change Account: If this box is checked then the Dropbox login account page will be opened for the user to login with a different account

Change Account Timeout(s): Specify the time AZQ will wait for the manual account login to be complete if the “Change Account” box is checked

DROPBOX upload statement

AZQ will use the Dropbox API to conduct upload test to a dropbox account, a valid Dropbox account is required for this test.



File Size: Specify the file size to upload,

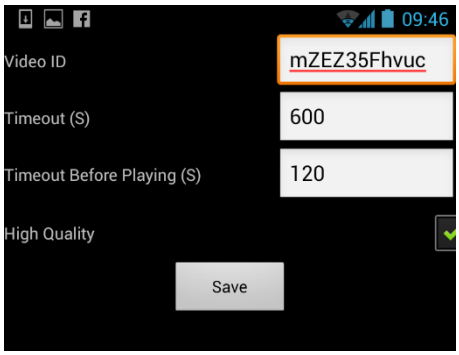
Upload Timeout(s): Specify the download time before the FTP download is considered as failed

Change Account: If this box is checked then the Dropbox login account page will be opened for the user to login with a different account

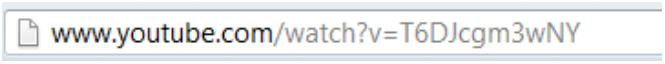
Change Account Timeout(s): Specify the time AZQ will wait for the manual account login to be complete if the “Change Account” box is checked

Youtube statement

AZQ will use the Youtube API to open a streaming VDO from Youtube while collecting radio parameters, data throughput and buffering statistics. Youtube must be installed on the phone with user account registered. No other activities can be done while the VDO is playing



VDO ID: Specify the streaming VDO to play, VDO ID can be found by opening the target Youtube VDO on a browser



1. VDO ID is the string behind /watch?v=
2. For this VDO, the ID is T6DJcgm3wNY
3. VDO ID is case sensitive

Timeout(s): Specify the duration before the download is considered as failed.

Timeout Before Playing (s): Specify the duration before the download is considered as failed.

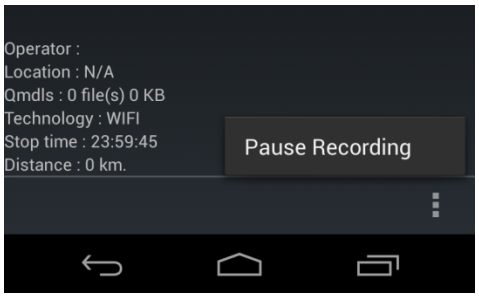
High Quality: AZQ will play the VDO in high definition if the "High Quality" box is checked

Pause statement

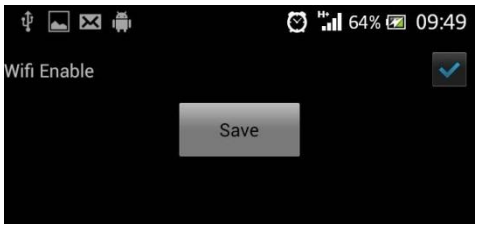
AZQ will pause the script from continuing to the next statement, user can click Un pause at any time to release the pause. While pausing, the radio parameters will not be recorded but Test KPIs (events) are still recorded.

Timeout(s): Specify the pause period duration, at the end of the timeout the next statement will be started even if Un pause hasn't been clicked.

You can also pause the script during testing by pressing option select "Pause recording"

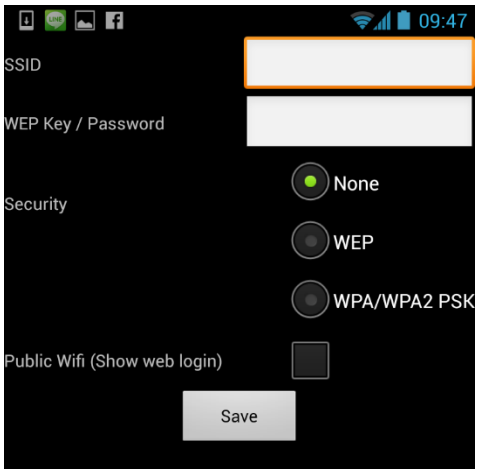


WIFI Enable statement



Android will enable/disable WIFI connection, check to enable and uncheck to disable. The phone's WIFI connection must be enabled for the WIFI connect/disconnect statement can be used.

Connect WIFI statement



Android will connect to a WIFI access point

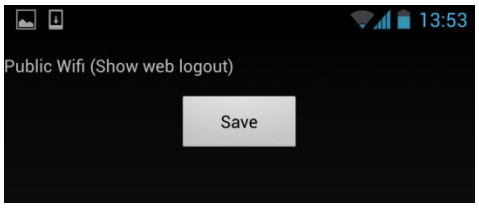
SSID: The name of the Wireless Network the Android will connect to

WEP Key/ Password: The password to the wireless network

Security: The security type of the Wireless Network

Public Wifi(Show web login): In case a public hotspot is being connected to, this must be checked to open the login page on the browser

Disconnect WIFI statement



Android will disconnect from the current WIFI access point

Public Wifi(Show web logout): In case a public hotspot is being connected to, this must be checked to open the logout page on the browser

Multi-RAB statement

With Multi-RAB, Android will conduct two types of test simultaneously provided that the network supports it (Some GSM network might not allow concurrent voice and data)

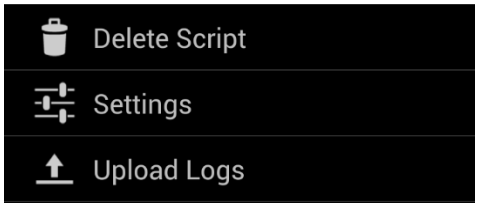
4 types of Multi-RAB tests are possible, Voice + FTP Download / Voice + FTP Upload / Ping + FTP Download and Ping + FTP Upload. The same rules for each of the statement apply.

Stop at Ping End: If this is checked, Android will end the Ping + FTP Download or Ping + FTP Upload statement once Ping is done. FTP Download or FTP Upload at that moment will count as fail if it's not successful before Ping is done

Stop at Voice End: If this is checked, Android will end the Voice + FTP Download or Voice + FTP Upload statement once voice call has ended (From normal call clearing/ Call drop/Call block). FTP Download or FTP Upload at that moment will count as fail if it's not successful before Voice Call is done

AZQ Settings

AZQ Settings can be accessed from AZQ main menu, here users can import cell file for display during outdoors drive test, setup automatic mode testing, enable audio alarms and download components for additional testing.



Importing Cell files into AZQ

Users can now import cell files into AZQ for display during outdoors testing,

GSM Cell File Format

Mandatory cell parameters

Parameter	Keyword	Type	Description
Cell name	CELL_NAME	string	Name of the cell
Site name	SITE_NAME	string	Name of the site
Latitude	LAT	float	Latitude of the site in degrees
Longitude	LON	float	Longitude of the site in degrees
Antenna beam width	ANT_BW	integer	Values range from 1-360
Cell direction	DIR	integer	Values range from 0-360
MCC	MCC	integer	
MNC	MNC	integer	

Optional cell parameters

Parameter	Keyword	Type	Description
Location Area Code	LAC	integer	Values range from 0-65535
Cell ID	CELL_ID	string	Values range from 0-65535
Channel Number	CH	integer	ARFCN. Values range from 0 to 1024
BSIC	BSIC	string	Base Station Identity Code in decimal format

Example

CELL_NAME	SITE_NAME	LAT	LON	ANT_BW	DIR	MCC	MNC	LAC	CELL_ID	BCCH	BSIC
XXX9340B1	XXX9340B	13.74864	100.5357	360	0	XX0	XX	15061	20257	573	1-0
XXX9340B2	XXX9340B	13.74864	100.5357	360	50	XX0	XX	15061	20258	571	2-0
XXX9340B3	XXX9340B	13.74864	100.5357	360	120	XX0	XX	15061	20259	569	0-2
XXX9340B4	XXX9340B	13.74864	100.5357	360	210	XX0	XX	15061	20261	567	0-8
XXX9341B1	XXX9341B	13.7446	100.533	360	0	XX0	XX	15061	20151	571	2-1

Cell search method

Name of cell (In AZQ Android and AZQ Replay) and lines drawn from current location to serving/neighboring cells (In AZQ Replay) are searched based on the following algorithm

- Matching CGI (MCC, MNC, LAC, CELL_ID)
- Matching MCC, MNC, CH, BSIC. If multiple matching cells are found, closest cell is selected. The cell is matched only if distance is less than 50km.

WCDMA Cell File Format

Mandatory cell parameters

Parameter	Keyword	Type	Description
Cell name	CELL_NAME	string	Name of the cell
Site name	SITE_NAME	string	Name of the site
Latitude	LAT	float	Latitude of the site in degrees
Longitude	LON	float	Longitude of the site in degrees
Antenna beam width	ANT_BW	integer	Values range from 1-360
Cell direction	DIR	integer	Values range from 0-360
MCC	MCC	integer	
MNC	MNC	integer	

Optional cell parameters

Parameter	Keyword	Type	Description
Location Area Code	LAC	integer	Values range from 0-65535
Cell ID	CELL_ID	string	Values range from 0-65535

Channel Number	CH	integer	ARFCN. Values range from 0 to 1024
Scrambling code	SCR	integer	Value range from 0-512
Routing Area Code	RAC	Integer	Values range from 0 to 255.

Example

CELL_NAME	SITE_NAME	LAT	LON	ANT_BW	DIR	MCC	MNC	SCR	CH	LAC	CELL_ID	RAC
XXX-BKK0006-1A	BKKXXXX	13.7668	100.586	360	0	XXX	XX	437	4433	14701	12003	41
XXX-BKK0006-1B	BKKXXXX	13.7668	100.586	360	120	XXX	XX	438	4433	14701	12006	41
XXX-BKK0006-1C	BKKXXXX	13.7668	100.586	360	270	XXX	XX	439	4433	14701	12007	41
XXX-BKK0007-1A	BKKXXXX	13.7594	100.541	360	30	XXX	XX	357	4433	14701	12008	41

Cell search method

Name of cell (In AZQ Android and AZQ Replay) and lines drawn from current location to serving/neighboring cells (In AZQ Replay) are searched based on the following algorithm
Matching MCC, MNC, SC, CH. If multiple matching cells are found, closest cell is selected. The cell is matched only if distance is less than 50km.

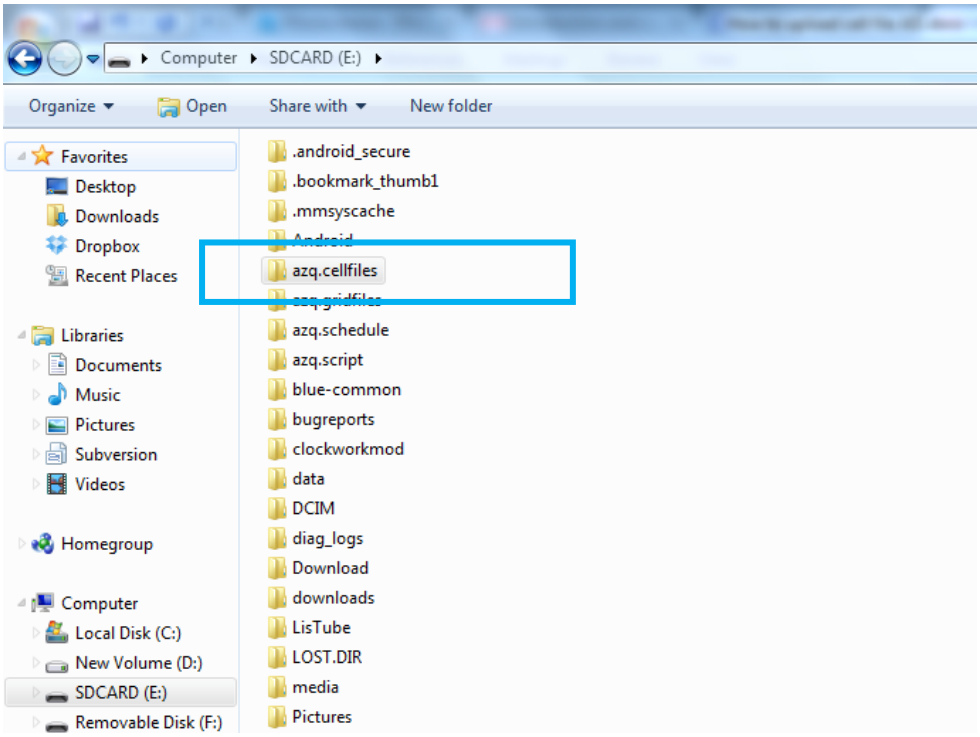
Cell file format that contains both GSM, WCDMA cells

You can create cell file that contains both GSM and WCDMA cells by adding column SYSTEM_TYPE. Put value GSM if current row is GSM cell and put value WCDMA if current row is WCDMA cell.

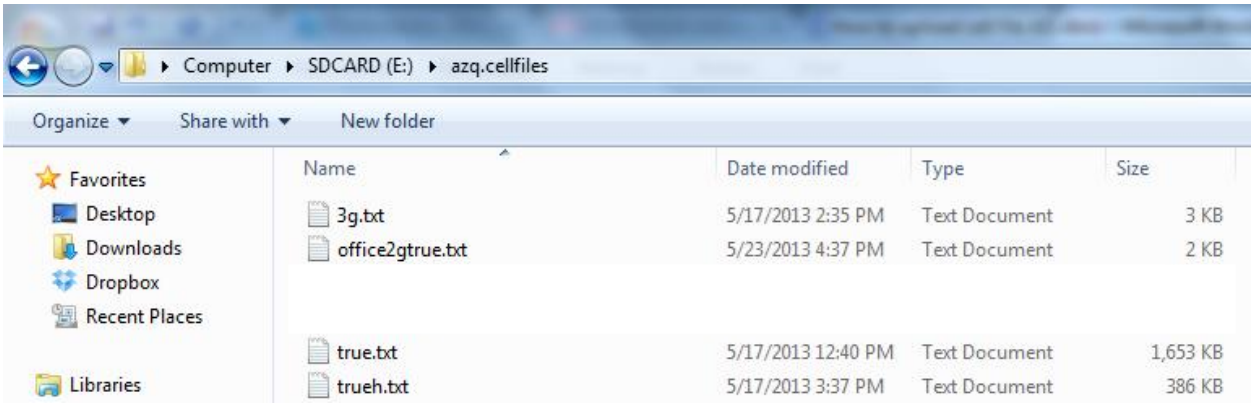
Parameter	Keyword	Type	Description
System Type	SYSTEM_TYPE	string	Possible values are GSM WCDMA

You can now move the cell file you have created into the phone .First Enter AZQ Application. Then, connect your phone to the PC via USB cable and choose “Disk Drive” Mode.

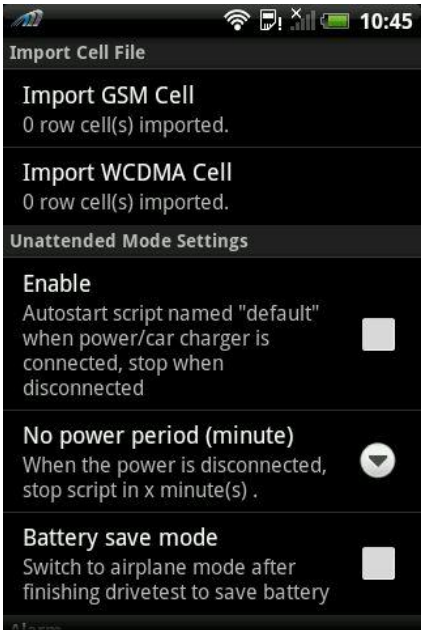
Change Connection mode from “Charge only” to “Disk Drive”



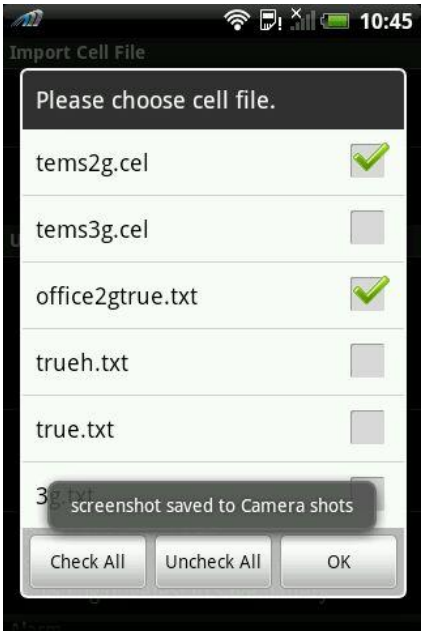
Move your AZQ Cell file into the folder AZQ.cellfiles in the SD card (if it’s not found, disconnect the USB cable and enter AZQ again)



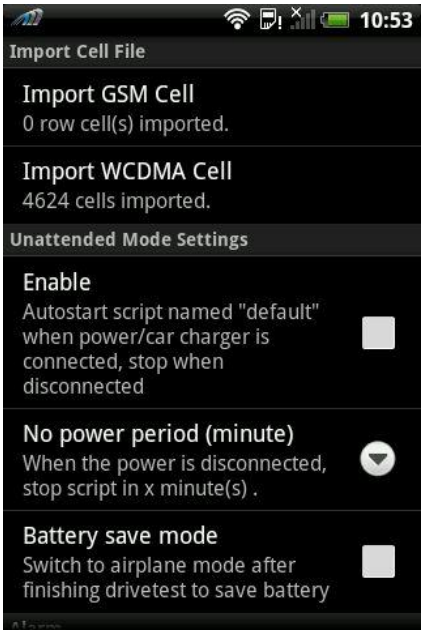
Now that the cell files are in the phone, disconnect the USB cable from the phone and enter AZQ again. -> Go to settings. You will now see 2 new options, import GSM Cell and import WCDMA Cell



Click on Import GSM or WCDMA then choose the cell files you want to use. Please be aware that the number of cell files will affect storage space and performance. Maximum of 10,000 Cells is recommended



After the import is successful, the number of cell files will be changed, as shown in figure7



If the number of imported cells is “0” after import, it means the cell file is incompatible with AZQ

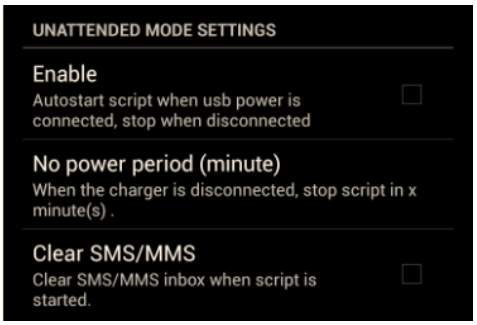
During Drive Test, user can now see Cell files displayed on the map. Maximum of 100 Cells can be displayed

GSM Cell will be displayed in Green/WCDMA cell will be displayed in Blue, Outdoor cells will be displayed in Triangles while Indoors cell will be displayed in squares

Unattended Mode Settings

In unattended mode the phone will start testing the script named “default” whenever power is plugged in and will stop testing and start uploading the log once power has been unplugged for a specified period of time. User must create a valid script named “default” for this mode to work.

If schedule is also checked, the phone will instead connect to AZQ server and download the appropriate script.



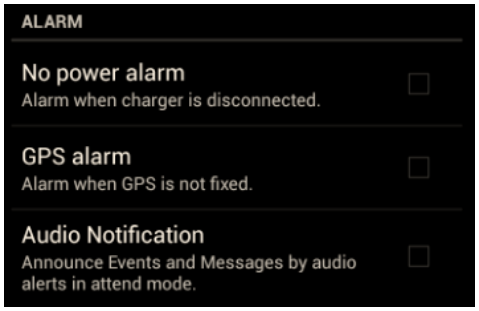
Enable: Check to enable automatic mode

No power period (minute): User can change the interval between the loss of power source and end of the test. Default setting is 1 minute

Clear SMS/MMS: If checked, Android will delete all SMS/MMS message in the inbox every time the test is started. SMS or MMS deleted in this way can't be recovered

Alarm Settings

User can enable/disable various audio notifications during drive test



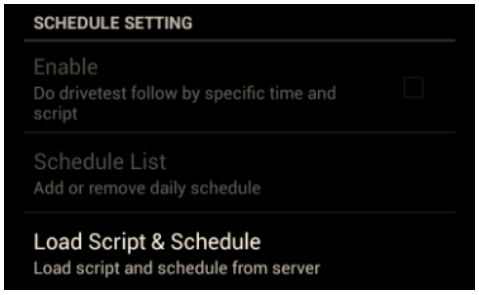
No Power Alarm: Check to enable audio warning when phone is not plugged into a power source during testing

GPS Alarm: Check to enable audio warning when GPS connection is lost

Audio Notification: Check to enable audio notification for various events used as call setup, call block, call drop, Handover

Schedule Settings

Instead of executing the default script when unattended mode is checked, Android can also download and execute script from the AZQ server. The script can also be assigned to a particular period of time.



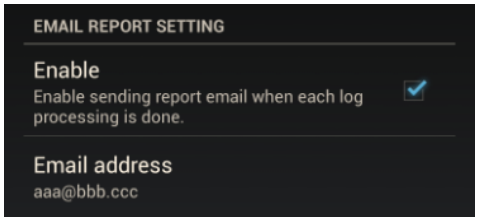
Enable: If checked, Android will connect to the AZQ server for the test script instead of executing the “default” script on the phone

Schedule list: View or create schedule

Load Script & Schedule: If clicked, Android will download the script from the server for use in manual mode.

Email Report Settings

User can assign an email address for the AZQ server to send back the report once uploaded log has been processed, please note that the server will send email report of logs conducted by this phone only

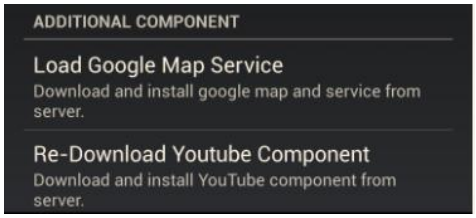


Enable: If checked, server will email the report once uploaded log has been processed

Email address: Enter the preferred email account; it doesn’t have to be the phone’s Google account

Additional Components

AZQ requires additional components for some particular test and functions to work please make sure that these components are downloaded before testing is conducted

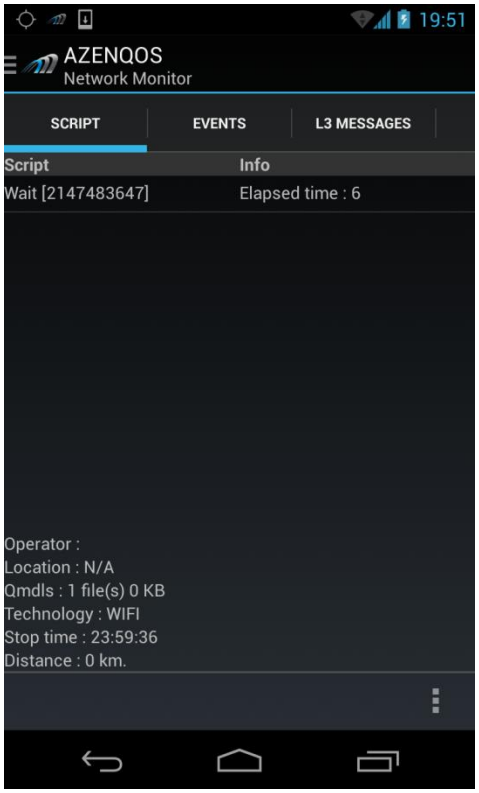


Load Google Map Service: Download map component for use in outdoors testing

Re-Download Youtube Component: Download Youtube components for use in Youtube testing

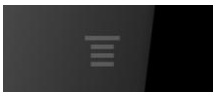
Data Panels

Once testing has been initiated, AZQ will open the main testing screen where various event and radio information can be viewed, you can swipe the data tabs to navigate between panels and also swipe the left side of the screen to enable split panel views



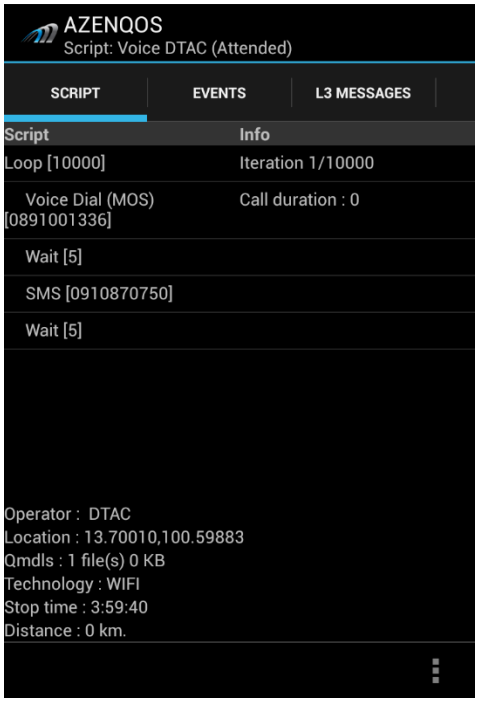
Split Panel View

User can click on this part of the screen or swipe any left part of the screen to bring up split panel view

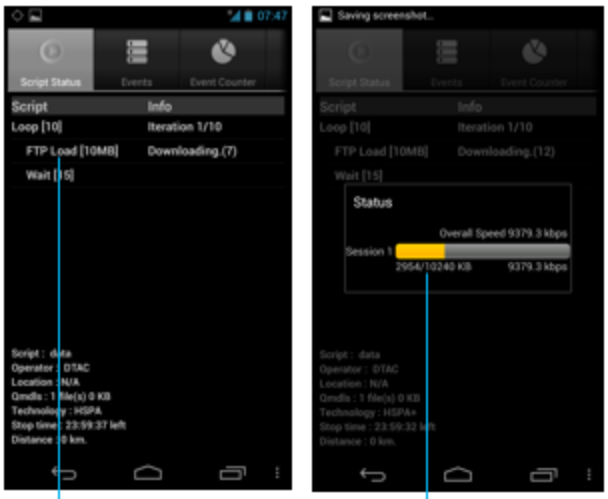
 or  hardware key on some Android phones

User can click to bring up the option to pause log during recording or mute audio notification sound during drive testing

Script Panel

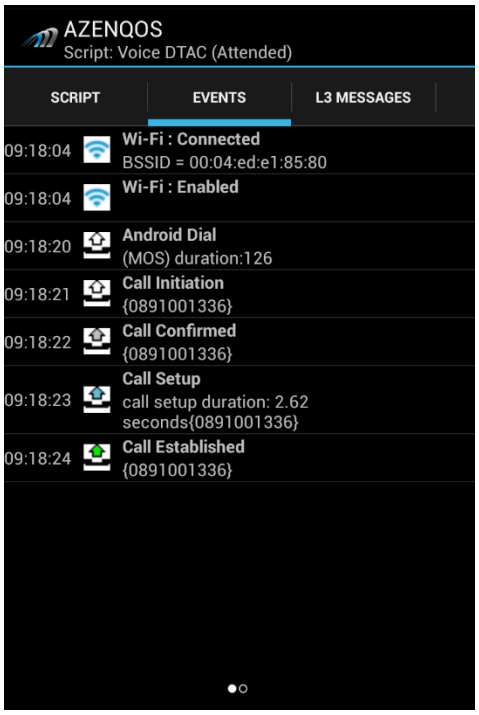


The script panel displays the script the user is running and the statement the phone is currently executing, user can click on some statements like data download to view more information



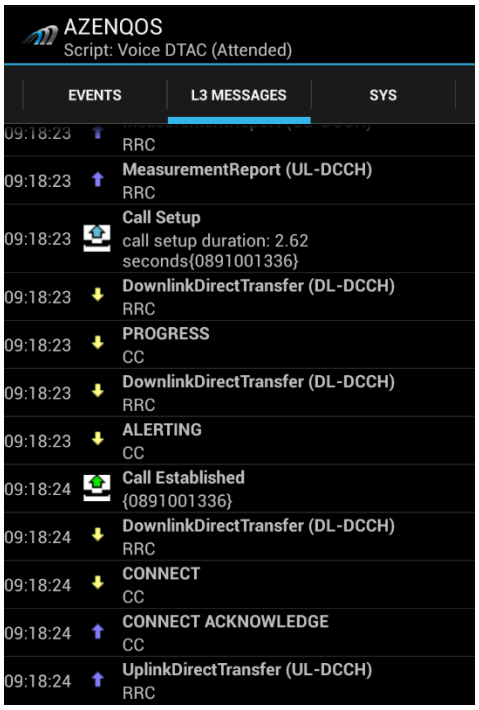
Click on FTP Download The status for FTP download will be shown

Events Panel

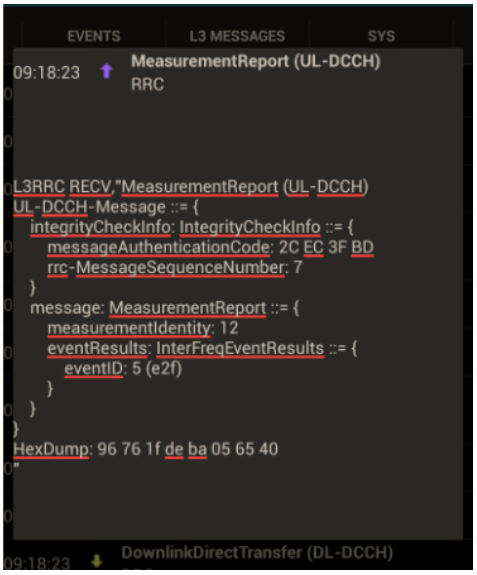


The event panel displays the KPI event and handover information for the user. This Screen can be swapped to the right to display the summary event counter

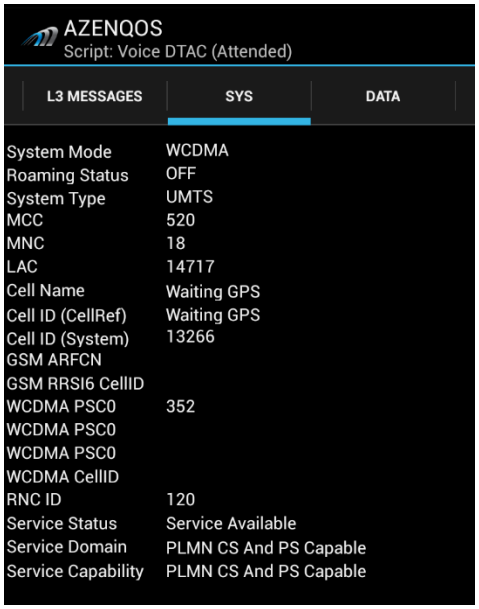
Layer 3 Messages Panel



The Layer 3 Messages panel displays the Layer 3 Messages of the test; user can click on the layer message itself to view additional information of the message

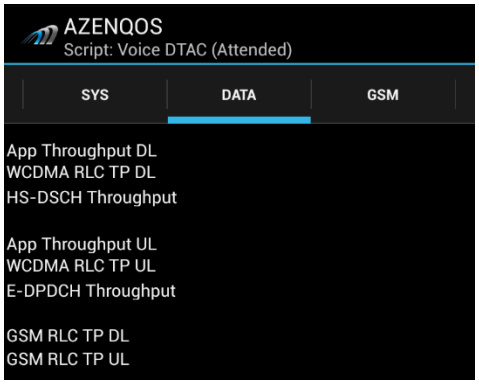


Sys Panel



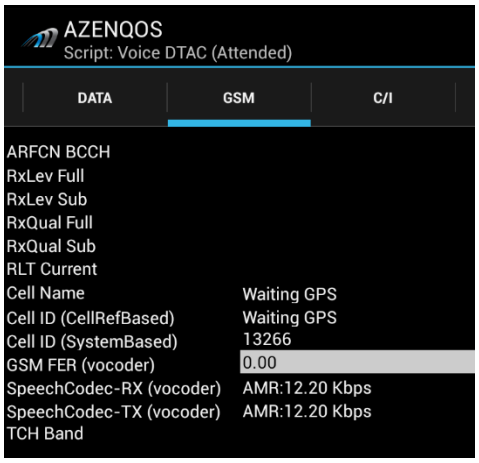
The sys panel displays relevant information about the system the phone is currently latched on to. The Cell ID (System) field will display the Cell ID retrieved from the Android API and may not be accurate, the Cell ID (CellRef) uses the cell reference file in the phone and needs valid GPS location fix to display

Data Panel



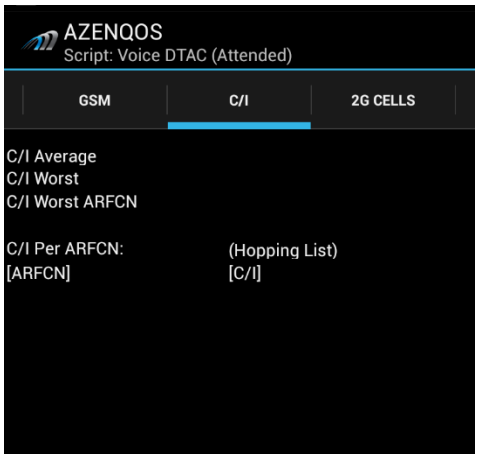
The data panel displays data-related parameters; it will be displayed only when Android uses data connection

GSM Panel



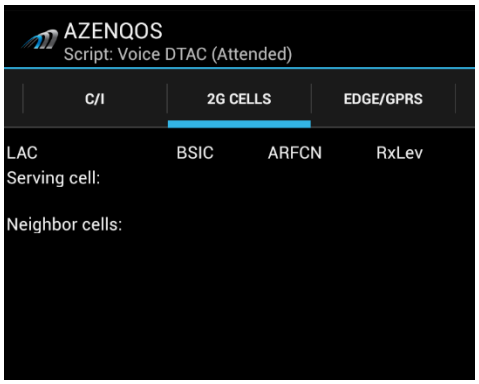
The GSM panel displays the relevant 2G radio parameter and Speech Codec during voice call test

C/I Panel



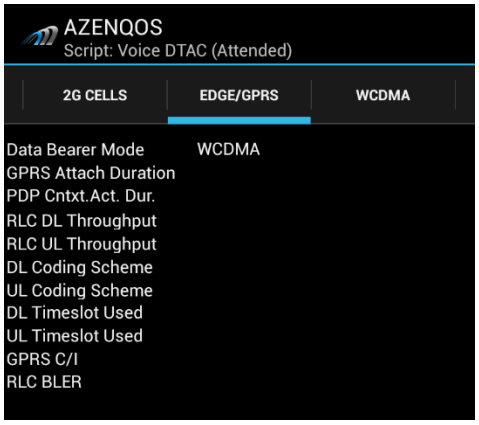
The C/I panel displays the C/I statistics while the phone is in GSM mode

2G Cells Panel



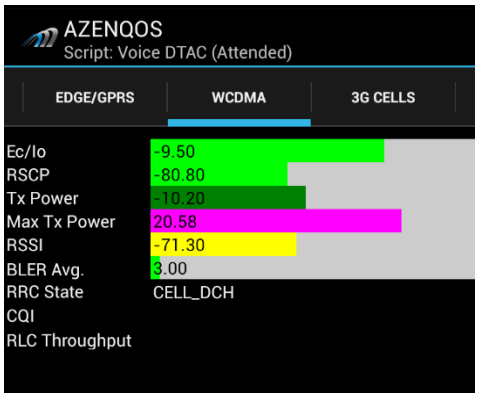
The 2G Cells panel displays the serving and neighboring cell information

EDGE/GPRS Panel



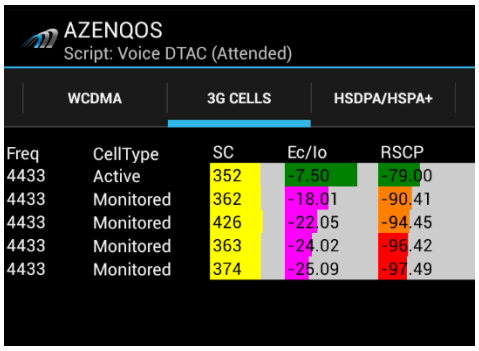
The EDGE/GPRS panel displays the 2G data related radio parameter when Android uses data or conduct data tests

WCDMA Panel



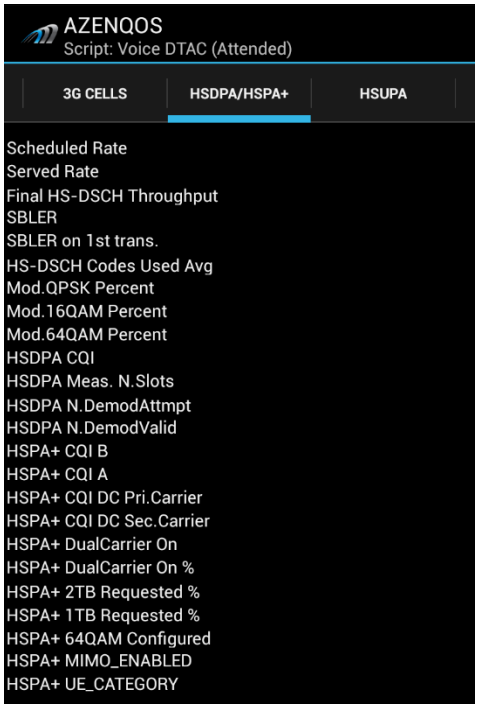
The WCDMA panel displays the relevant WCDMA radio parameter

3G Cells Panel



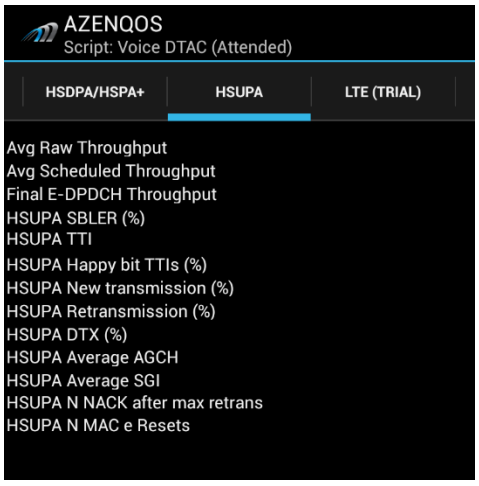
The 3G Cells panel displays the WCDMA Active/Monitored Set list

HSDPA/HSPA+ Panel



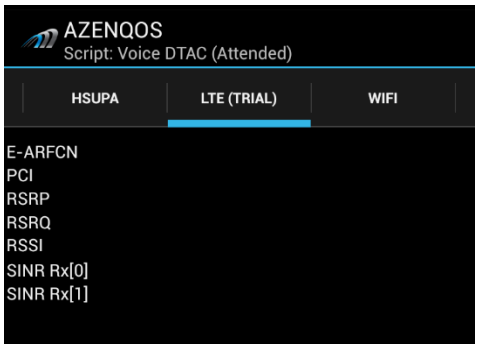
The HSDPA/HSPA+ panel displays the 3G data related radio parameter when Android uses data or conduct data tests

HSUPA Panel



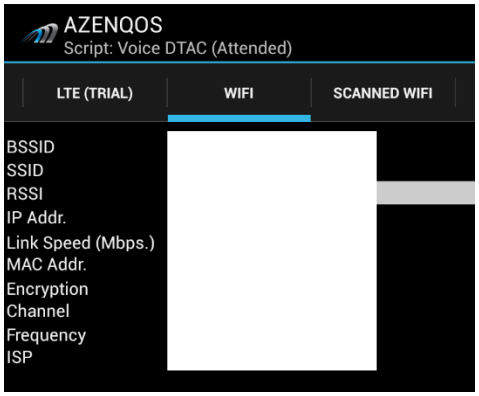
The HSUPA panel displays the 3G data related radio parameter when Android uses data or conduct data tests

LTE Panel



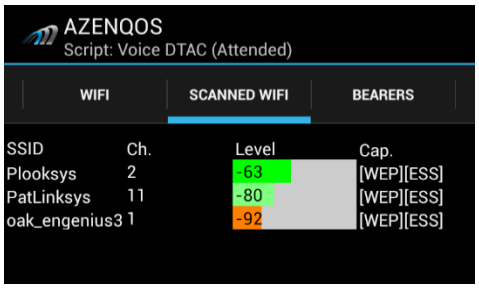
The LTE panel displays the relevant LTE radio parameter

WIFI Panel



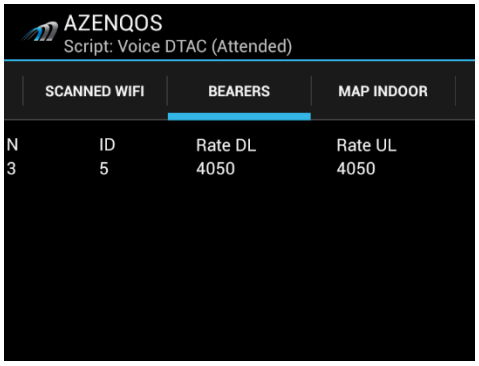
The WIFI panel displays the information of the Wi-Fi access point the phone currently connects to

Scanned WIFI Panel



The WIFI panel displays the information of Wi-Fi access points that Android can detect

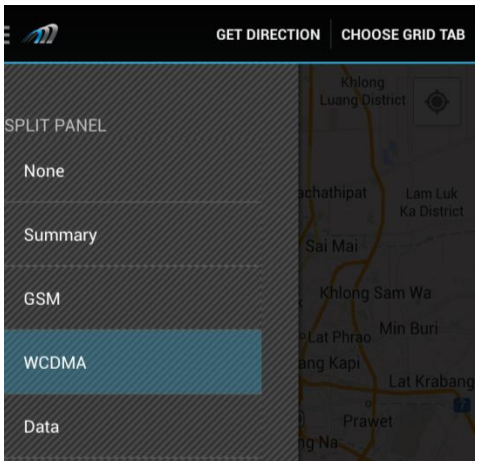
Bearers Panel



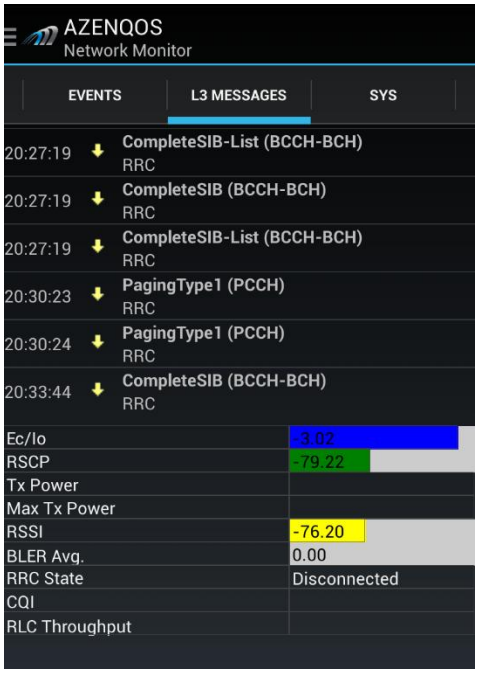
The Bearers panel displays the voice and data bearer currently assigned to the phone

Split Panel

User can click on this part of the screen or swipe any left part of the screen to bring up split panel view, user can then choose the split panel to display



With split panel, two sets of information can be seen on the screen at the same time, for example, if WCDMA is chosen as a split panel while in Layer 3 Message tab, user can view multiple information at the same time.

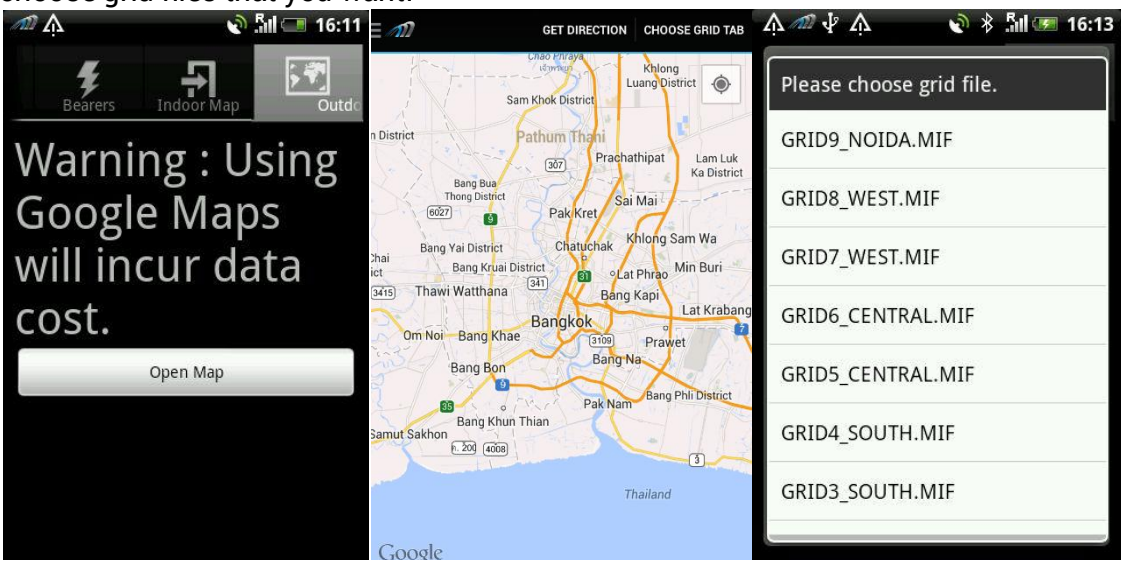


Split panel is designed to allow users to display multiple sets of information at the same time and allow for easier analysis during testing.

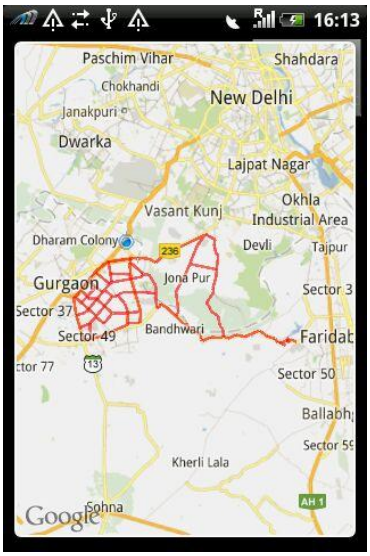
Outdoor map

Exporting and opening .mif grid file in AZQ

After starting script, select “Outdoor” tab and click “Open Map” button. From map screen, touch at the menu button on the phone then select “Choose Grid Tab” then choose grid files that you want.



You will see grid map overlay to Google map as below

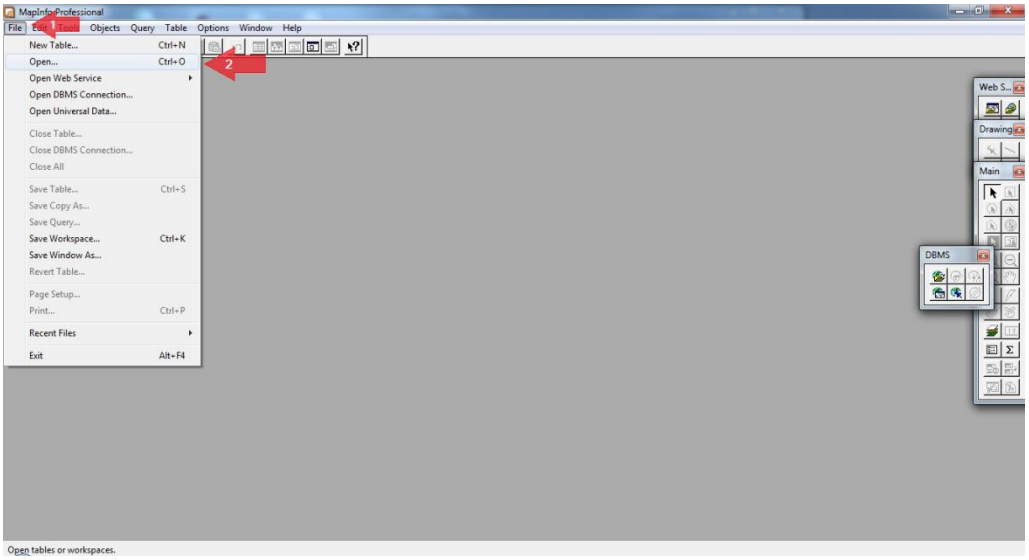


How to use your own grid files in AZQ

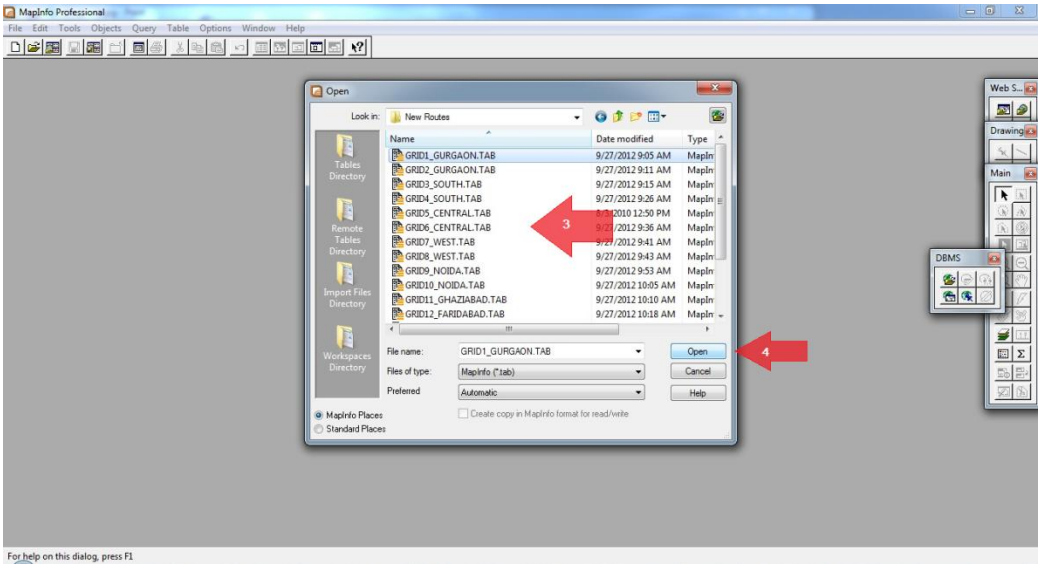
AZQ support only .MIF map file format but normally your grid will come as .TAB. You can use MapInfo program to convert from .TAB to .MIF by following below instruction

1. Open MapInfo Professional then click File

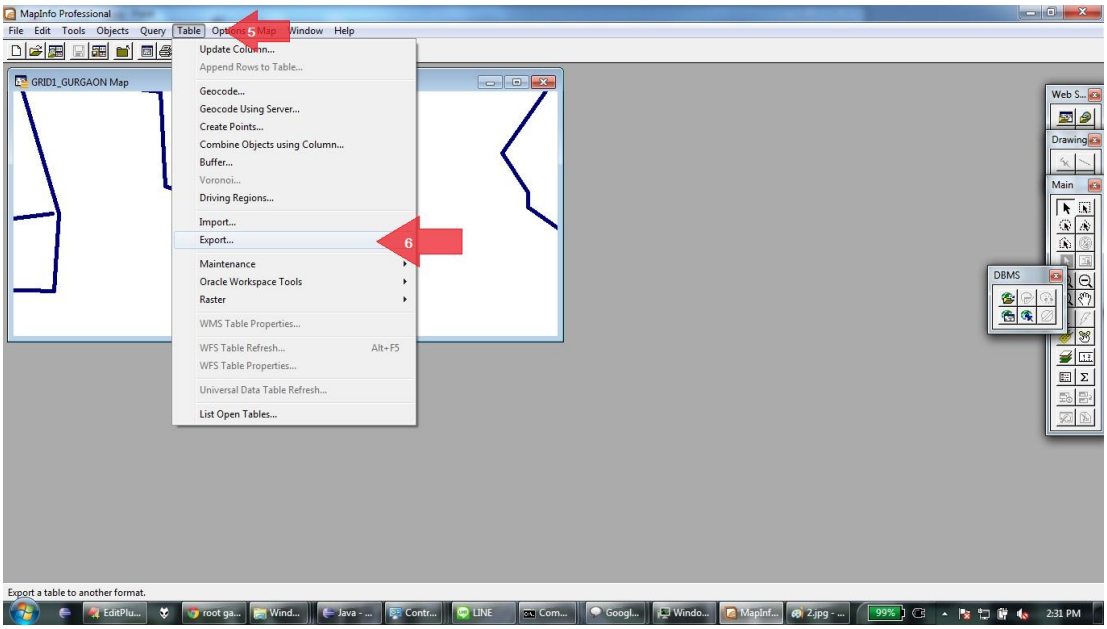
2. Select open



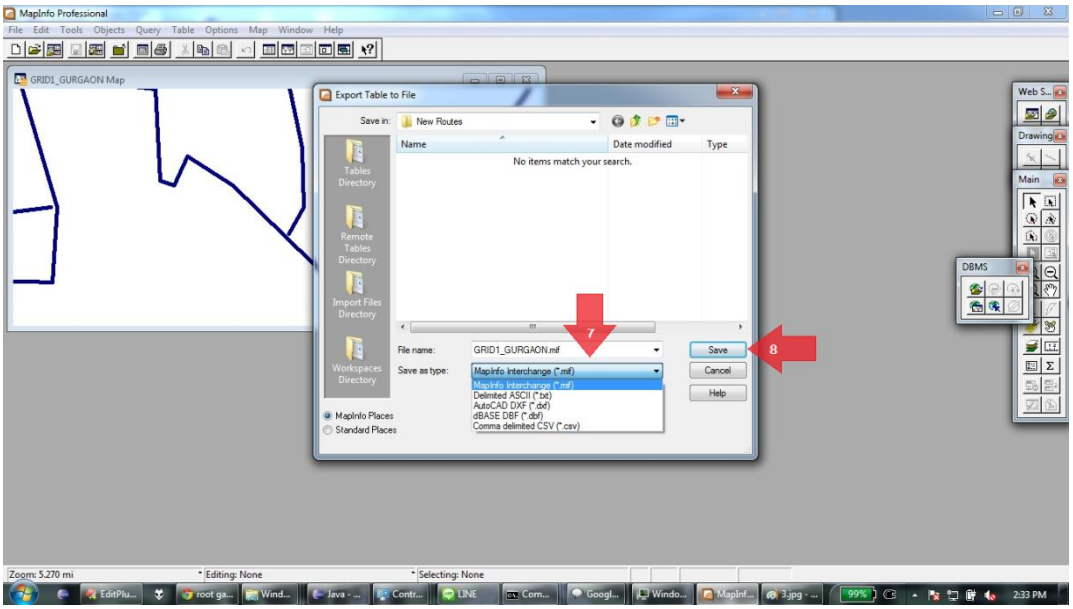
3. Choose grid file (*.TAB) that you want to export
4. Click “Open”



5. Click Table
6. Select Export

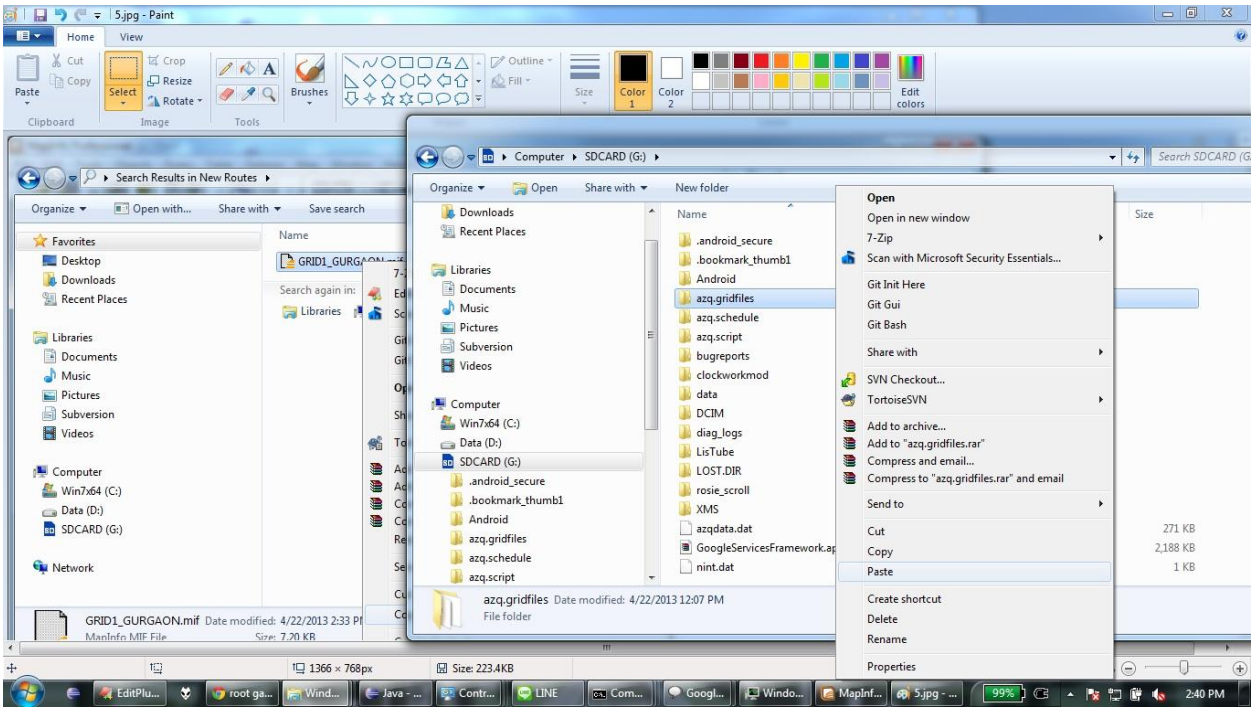


7. Select MapInfo Interchange (*.MIF)
8. Click Save



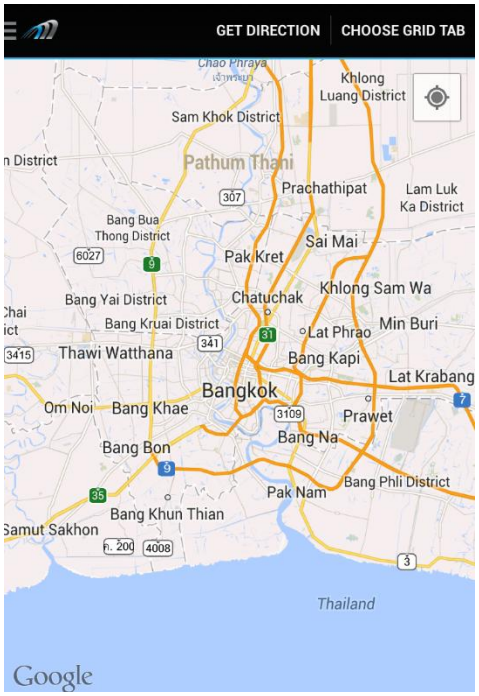
Transferring .MIF to your phone

After getting .MIF, you have to copy this file to SDCARD on the phone and must place it inside folder AZQ.gridfiles as shown below. AZQ will search for grid file (*.MIF) from that folder. When you click “Choose Grid Tab” you will find your .MIF in the list.

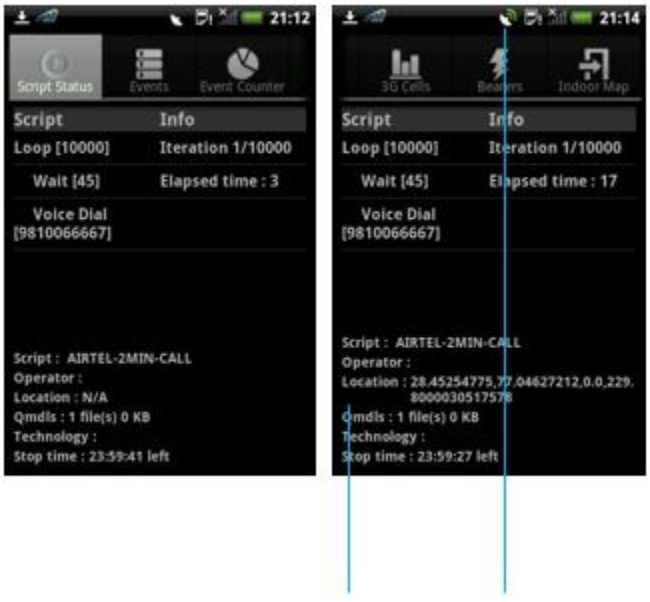


My Location function

Once user opens the map, navigation and location functions will become available



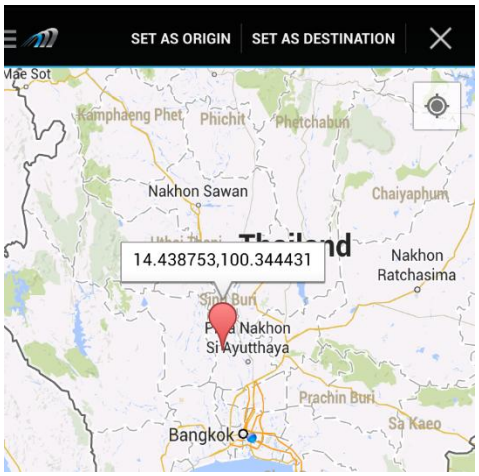
My location will zoom in on the user's location once GPS has been fixed, the GPS icon on the screen will notify the user when GPS location is fixed



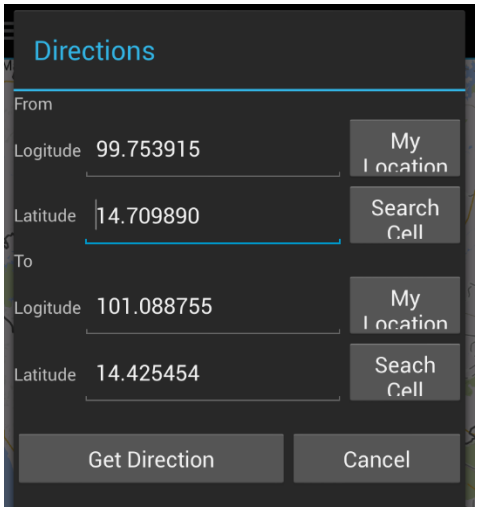
Lat/Long is displayed The GPS icons stop blinking

Get Direction function

User can navigate from one location to another with the get direction function; press on any point on the screen, the upper right will now display “Set as origin” and “Set as destination”



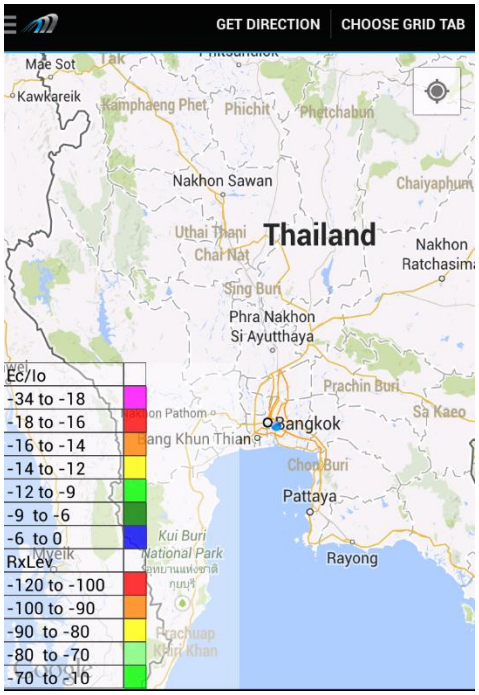
User can then set that location as origin or destination, once two points has been selected, click on “Get direction” to bring up the navigation screen



User can also use “Search Cell” to use the cell name as origin or destination, select Get direction and drive route will be generated

Route Plotting on Google Maps

AZQ will display Rxlvl and EC/IO on the drive route; user can also use the split panel function to display additional information such as Cell name & Color Theme

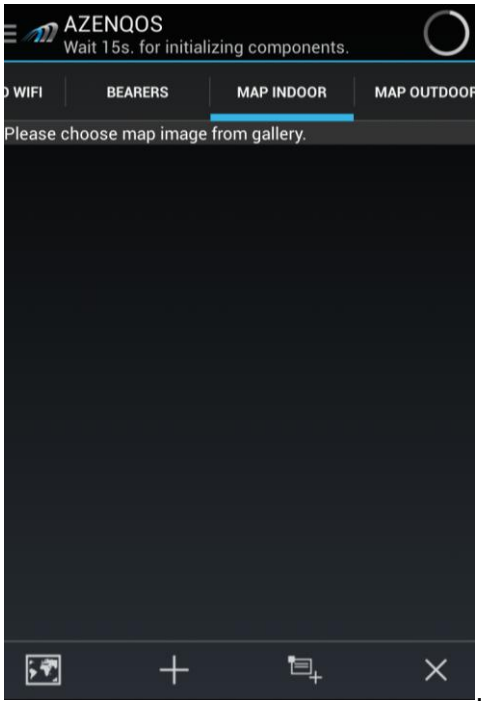


Google Maps in Offline Mode

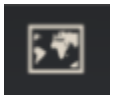
Maps information may not update properly if the phone doesn't have data connection. However, user can cache the map beforehand by opening the map before the drive test in AZQ's network monitoring and glide around the designated drive test areas at various zoom levels before exiting. This will cache map information and will allow map to display correctly in the drive test even without data connection.

Indoor Map

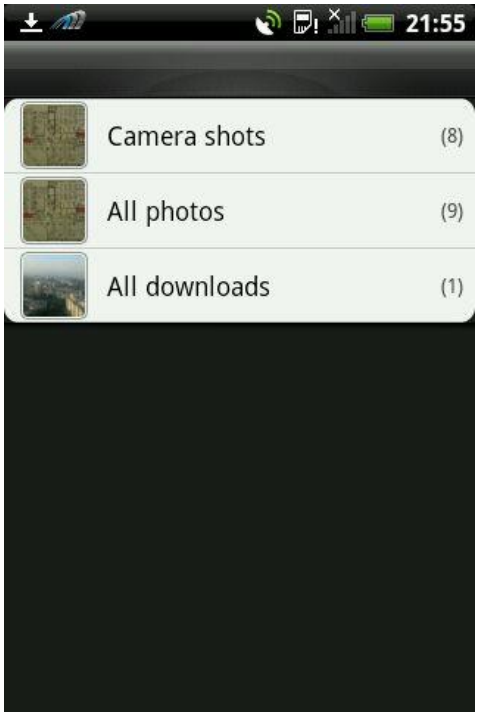
For indoor testing without GPS, users can use the Indoor map function in AZQ to open a PNG or JPG floor plan format and mark walk test path. Please be noted that one log can't contain both indoors and outdoors location information

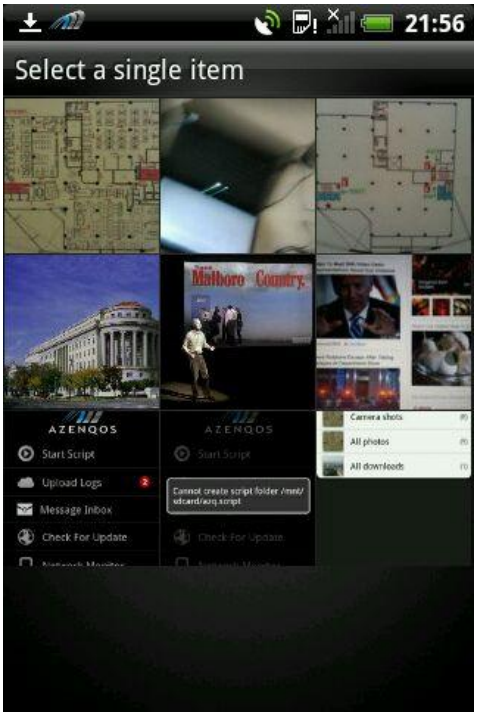


Loading map file into AZQ



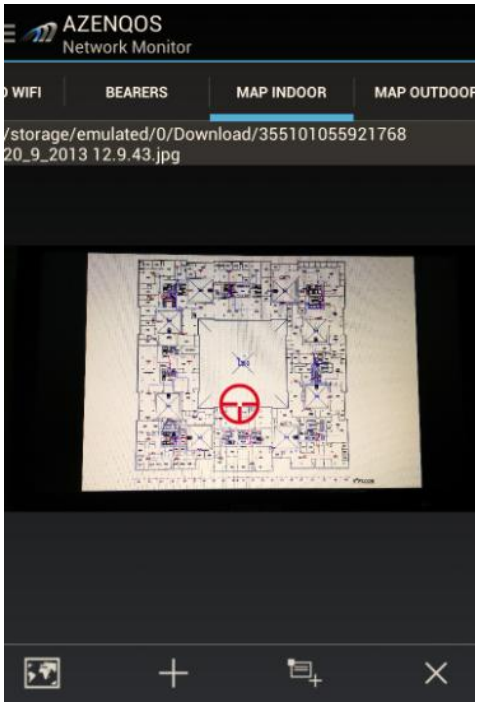
On the map indoor tab, click on the “open map” icon





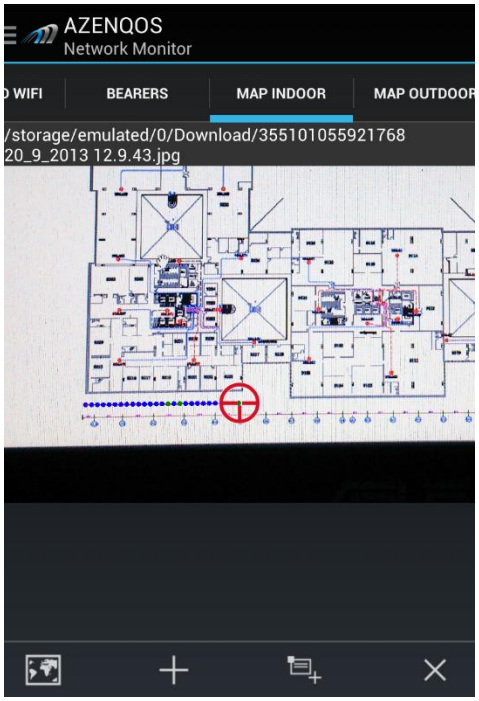
User can then choose the floor plan image from the gallery, If the image file larger than 1MB the phone might run out of memory, in that case please restart the test.

Plotting Indoor Location



User can pinch to zoom the image for more accurate marking, mark points by moving the target reticle to the desired point and click  to add points with tag click 

If users want to delete a marked point, click on  and the latest point will be deleted while the recorded radio parameter will still be stored for the next map marking.

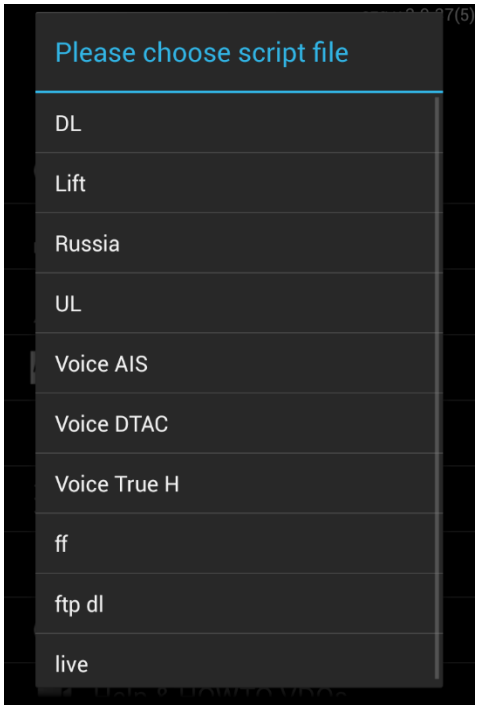


Log File

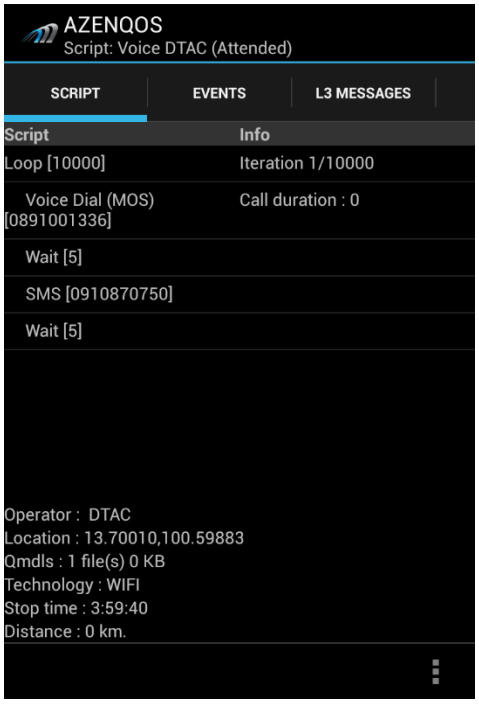
Start Recording

To start recording log, click on start script

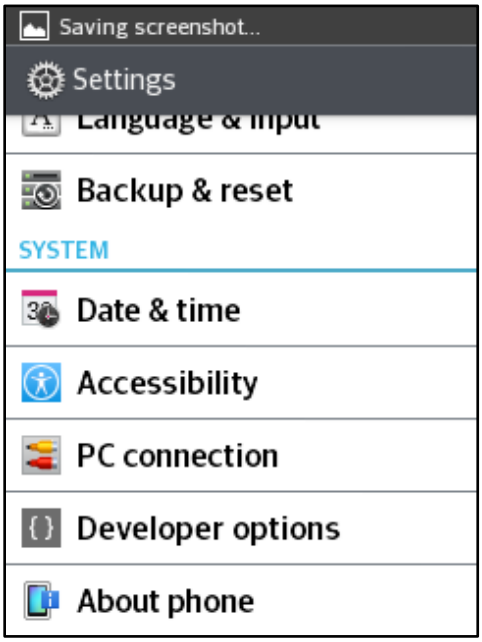
User can then select the desired script to run.

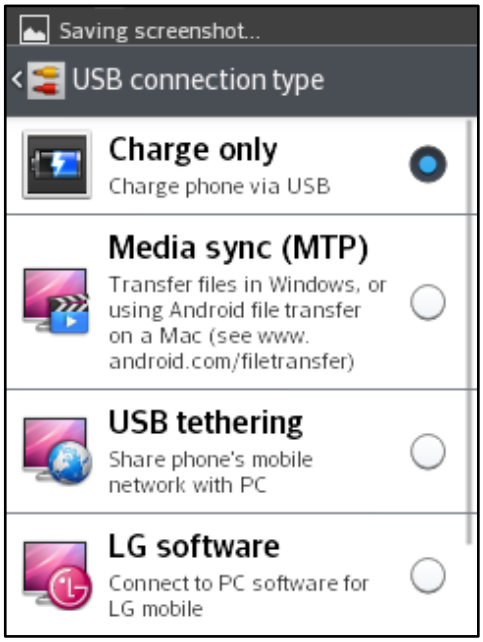


The test will be executed and the log recorded after 15 seconds



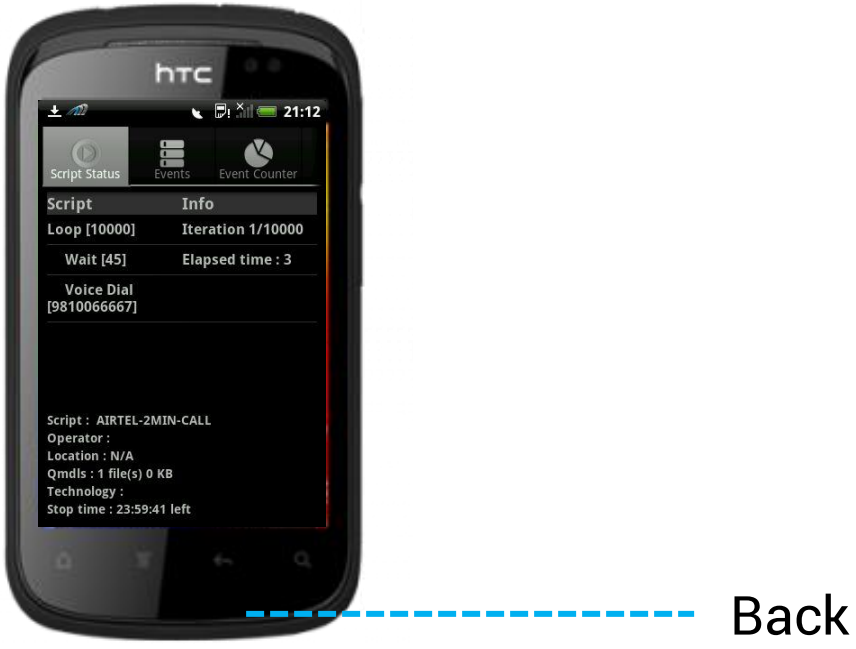
Please note that if connected to the PC as a power source during test, the phone must be in **"Charge Only"** mode, this can be found in the Settings -> Power or Settings -> PC Connection of the phone. For some models like the Sony Xperia E charging through the PC is not recommended





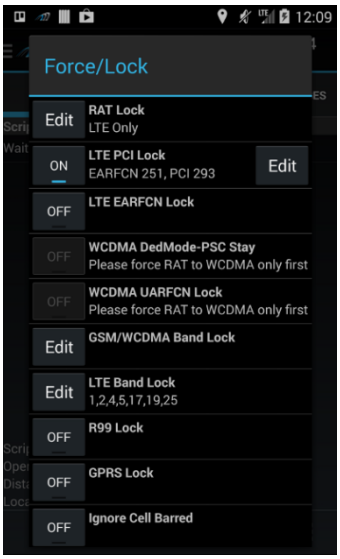
Stop Recording

Once testing is complete, user can press the back button on Android to end script and stop recording



Cell Locking

On supported model, the user can perform locking / forcing functions by clicking on “Force / Lock” button on the bottom of the screen



LTE PCI Lock: This is LTE 'cell locking'. For testing purposes, engineers can force the phone to use only the specified LTE cell via this feature. Suitable for testing a specifiec LTE Cell in areas where reselections/handovers happen too often or testing the maximum coverage of the cell for cross sector issues.

LTE EARFCN Lock: This forces the phone to only use the specified LTE frequency channel number (EARFCN) within a specified LTE Band.

LTE Band Lock: This forces the phone to only use the specified LTE Band for LTE operations.

WCDMA PSC Stay: This feature disables WCDMA Handovers (by disabling RRC Measurement Reports) and would cause to phone to 'stay' on the current PSC while in dedicated (Cell_DCH) mode. Users simply enable this function, disables data (to make sure RRC is idle), then walk/wait for phone to reselect to your desired PSC. When AZQ shows your desired PSC, immediately make a voice call - this would make phone enter Cell_DCH on that PSC and then no handovers would happen (since no MeasurementReports would be sent) until either a 'Radio Link Failure' or a 'Call End' happens which causes the phone to exit Cell_DCH state.

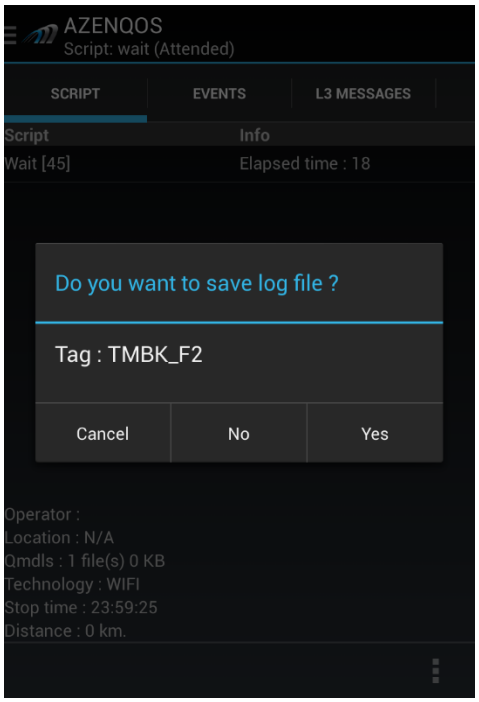
WCDMA UARFCN Lock: This forces the phone to only use the specified WCDMA Frequency channel number (UARFCN) for WCDMA operations.

GSM/WCDMA Band Lock: This forces the phone to only use the list of specified GSM and WCDMA bands for its operations. For example, we can tell the phone to only use WCDMA 2100 Mhz Band only, or GSM 1800 only, etc.

R99 Lock: This disables 'HSDPA' and 'HSPA+' and forces the phone to use only R99 WCDMA data mode. The Android data indicator would show '3G' instead of 'H' or 'H+'. Suitable for legacy report test cases where customers need to ensure and test WCDMA R99 operations.

GPRS Lock: This disables 'EDGE' and forces the phone to use only 'GPRS' for GSM data mode. The Android data indicator would show 'G' instead of 'E'. Suitable for legacy report test cases where customers need to ensure and test GPRS operations.

Ignore Cell Barred: This requires USIM with EF_AD set as 'cell test'. If the HPLMN of the SIM is the same with the 'barred cell' then the phone would 'ignore the cell's barring status' and use/camp on the cell. Suitable for pre-testing new cell sites before enabling it to the public users/customers.



Tag name or Job ID can be entered at this time, please note that the tag must be in English only with no spacing

Yes: will save the log and exit testing

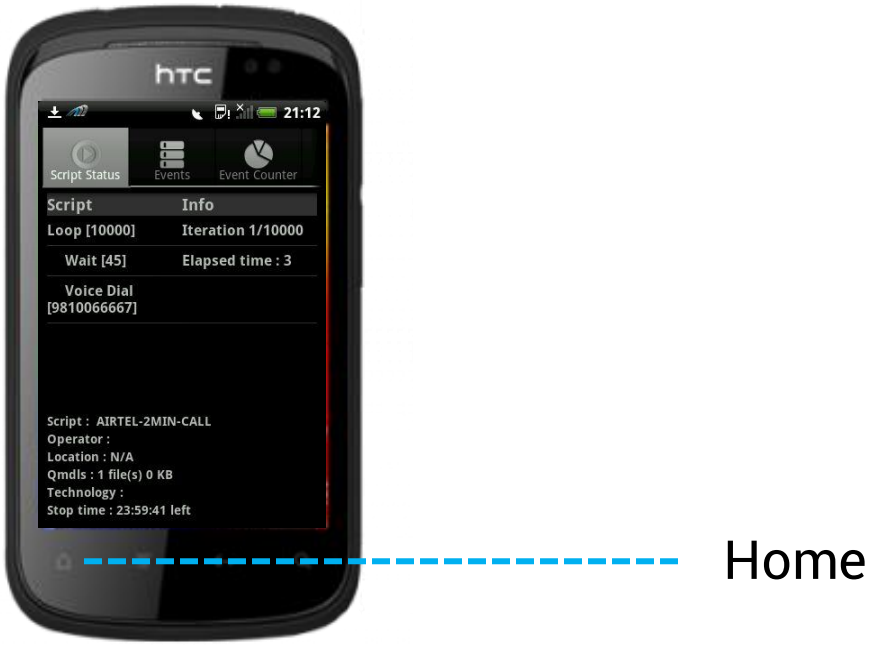
No: will stop testing without saving the log

Cancel: will bring you back to the testing screen

Log file will be saved to the sdcard/diag_logs folder, once uploaded it will be moved into sdcard/diag_logs/uploaded, the file can be moved to sdcard/diag_logs again in case a manual upload retry is needed

Background Mode

During testing, the user can press the home button to come out to the main menu and conduct other activities while the log is being recorded, please be noted that activities that require heavy memory usage might cause the phone and AZQ to crash,



Appendix

List of Measurements (All data might not be available on the phone screen)

1.0	**Access Technology**
1.1	GSM (GSM 850/900/1800/1900)
1.2	WCDMA (850/900/2100) HSPA+ 42.2 Mbps/HSUPA 5.76 Mbps
1.3	LTE (FDD LTE 800/850/1800/2100/2600) 100 Mbps/50 Mbps
1.4	Wi-Fi (IEEE802.11a/b/g/n)
2.0	**Android Test Terminal**
2.1.1	Support Android OS 4.1 or higher
2.1.2	Support for locally-sourced & supported Commercial Android mobile phones
2.1.3	Ability to sync benchmarking scripts with up to 3 other phones
2.1.4	Ability to connect to Bluetooth GPS
3.0	**Parameter Measurement Items**
3.1	**GSM**
3.1.1	Absolute Radio Frequency Channel Number (ARFCN – BCCH and TCH)
3.1.2	Timing Advance (TA)
3.1.3	BSIC
3.1.4	Used time slot (TS)
3.1.5	RxLev (Full/Sub)
3.1.6	RxQuality (Full/Sub)
3.1.7	Hopping Information (Hopping frequency, MAIO, Hopping Sequence)
3.1.8	Speech codec (FR, HR, EFR, AMR)
3.1.9	Frame Error Rate (FER)
3.1.10	C/I (hopping list)
3.1.11	Radio link timeout (RLT)
3.1.12	MS power level
3.1.13	C1/C2
3.1.14	DTX (on/off)
3.1.15	Neighbor information
3.1.16	Cell reselection
3.1.17	Call Disconnect cause
3.1.18	Cell Global Indication (CGI)/LAC
3.1.19	Band (900/1800 MHz)
3.2	**GPRS/EDGE**
3.2.1	CS/MCS usage (UL/DL)
3.2.2	Modulation method
3.2.3	Time slot usage (/UL/DL)
3.2.4	SNDCP/LLC/RLC throughput

3.2.5	GMM/SM state
3.2.6	RAC (Routing Area Code)
3.2.7	Routing area update
3.3	**WCDMA**
3.3.1	Ec/Io (Active set, Monitor set, Detect set)
3.3.2	RSCP (Active set, Monitor set, Detect set)
3.3.3	RSSI
3.3.4	SF usage
3.3.5	UE Tx power
3.3.6	RRC state
3.3.7	UARFCN
3.3.8	Speech codec (AMR – codec rate)
3.3.9	Active and neighbour set information (both WCDMA and GSM - Rxlev)
3.3.10	Handover state
3.3.11	RACH power
3.3.12	BLER
3.3.13	DL Frequency
3.3.14	UL Frequency
3.3.15	Scrambling Code
3.3.16	Rx Power
3.3.17	Tx Power
3.4	**Packet switch (R99)**
3.4.1	Application/RLC throughput
3.4.2	PDP context activation info. (TP/state)
3.4.3	Data amount (sent/receive)
3.4.4	Session information (FTP get info, FTP download)
3.5	**Packet switch (HSPA)**
3.5.1	HSDPA Scheduled Rate
3.5.2	HSDPA Served Rate
3.5.3	HSDPA MAC Layer Rate
3.5.4	HSDPA SBLER on 1st Transmission
3.5.5	HSDPA SBLER
3.5.6	HSDPA CQI Number avg.
3.5.7	HSDPA Num Codes Used Avg.
3.5.8	HSDPA MOD QPSK Percent
3.5.9	HSDPA MOD 16QAM Percent
3.5.10	HSDPA Meas from num 2MS Slots
3.5.11	WCDMA RLC DL Throughput
3.6	**Signaling**
3.6.1	L3 message display in replay
3.6.2	L3 message display on Android

3.6.3	RRC signaling
3.7	**Miscellaneous Parameter**
3.7.1	Time
3.7.2	Date
3.7.3	LAT/LON
3.7.4	MAP from GPS or manual marking for indoors
3.7.5	Display Events message (ex. call attempt, handover attempt, dropped call and etc.)
3.8	**Function**
3.8.1	Google Maps file format, ability to import Mapinfo route,JPG,PNG map for indoor testing
3.8.2	Plot ECIO/Rxlvl parameters on map
3.8.4	able to show active cell when site database is imported
3.8.5	Display cell sites with different technologies with different color
3.8.7	chart plot(bar, line) (selectable)
3.8.9	Script can be made on phone or server
3.8.10	Script can be remotely assigned from the server
3.8.11	Test both indoor and outdoor
3.8.12	Phone can be used in Automatic, static and manual mode
3.8.17	Automatically generate Predefined Microsoft Excel, CSV, Google Earth Report on the server within 10 minutes of log upload
3.8.19	display route on map(selectable/offset setting)
3.8.29	sound identification (event)
3.8.36	export logfile to replay on PC manually
4.0	**Application Service Test**
4.1	**Voice End To End Test**
4.1.1	can test mobile to mobile
4.1.2	can test mobile to landline
4.1.3	can test landline to mobile
4.1.4	can show speech codec
4.1.5	can show Call Setup Time
4.1.6	can measure MOS Quality PESQ P.862
4.1.7	can set call setup time
4.1.8	can set call duration time
4.1.9	2G/3G Handover
4.1.10	Show drop call/Fail call cause
4.2	**SMSP2P**
4.2.1	can test mobile to mobile
4.2.2	automatically clear the inbox once SMS test successful
4.2.3	can measure percent of success send/receive
4.2.4	can measure send and receive time
4.2.5	can show alerting when receive the message
4.3	**FTP Download / Upload**
4.3.1	Multi-Threaded Upload FTP test

4.3.2	Multi-Threaded Download FTP test
4.3.3	can specify size of file transfer
4.3.4	can measure Application /RLC/LLC throughput
4.3.5	can measure BLER
4.3.6	can measure download duration
4.3.7	can show coding scheme
4.3.8	can show DL time slot
4.4	**HTTP Browser**
4.4.1	can test with various web page size
4.4.2	can measure Application RLC throughput
4.4.3	can measure BLER
4.4.4	can measure download duration
4.4.5	can measure objects load result (success/fail)
4.5	**MMSP2P**
4.5.1	can test mobile to mobile
4.5.2	automatic clear message at terminal mobile
4.5.3	can measure percent of success send/receive
4.5.4	can measure send and receive time
4.6	**Ping**
4.8.1	can test mobile to server
4.8.2	can measure ping duration (RRT)
4.8.3	can measure packet loss
4.8.4	can customize test file size
4.8.5	can measure throughput
4.8.6	flexible to setting Job sequence
4.7	**Inter RAT**
4.7.1	can test Inter RAT with CS service (AMR call) from 3G to 2G
4.7.2	can test Inter RAT with PS service from 3G to 2G
4.7.3	can show event message detail
4.8	**Multi RAB Test**
4.8.1	can test AMR call + PS(Interactive Class)
4.8.2	can show event message detail

Support

For General Program support: azqhelp@gmail.com
For Installation support: bacidea@gmail.com

Android Test Terminal

OS Version

Support Android OS 4.0 or higher

Test Terminal Support (Qualcomm chipset on this list only)

Support for locally-sourced & supported Commercial Android mobile phones (Single SIM variant only)

Xperia V
Samsung Galaxy S5 (SM-G900F)
Google Nexus 5 (LG D821)

Ability to connect to Bluetooth GPS

Please find the guide to Bluetooth Connection located at.

http://www.youtube.com/watch?v=wtsMxSsg9IU

http://www.youtube.com/watch?v=pjdnWANrks8