

# Snapdragon™ 8655 Mobile Development Platform – Android

## User Guide

### Rev 2.0

Table 1. Revision History

Revision	Date	Purpose
1.0	September 2010	Initial release.
2.0	December 2010	Updates from reviews.

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## 1 Introduction

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### 1.1 Purpose

This document provides information about setting-up and using the Snapdragon™ 8655 Mobile Development Platform - Android™.

This document provides user information for the Snapdragon™ 8655 Mobile Development Platform. For more Android-related device information, see the  page at <http://developer.qualcomm.com/dev/android>.

### 1.2 Scope

The target audience for this document is Snapdragon™ 8655 Mobile Development Platform end users, developers, and driver writers.

### 1.3 Technical assistance

For assistance or clarification on information in this guide, submit a case to [BSQUARE](mailto:MDPSupport@bsquare.com) Corporation at [MDPSupport@bsquare.com](mailto:MDPSupport@bsquare.com).

### 1.4 Development Device Notice

This development device contains RF/digital hardware and software intended for engineering development, engineering evaluation, or demonstration purposes only and is intended for use in a controlled environment. This device is not being placed on the market, leased or sold for use in a residential environment or for use by the general public as an end user device.

This development device is not intended to meet the requirements of a commercially available consumer device including those requirements specified in the European Union directives applicable for Radio devices being placed on the market, FCC equipment authorization rules or other regulations pertaining to consumer devices being placed on the market for use by the general public.

This development device may only be used in a controlled user environment where operators have obtained the necessary regulatory approvals for experimentation using a radio device and have appropriate technical training. The device may not be used by members of the general population or other individuals that have not been instructed on methods for conducting controlled experiments and taking necessary precautions for preventing harmful interference and minimizing RF exposure risks. Additional RF exposure information can be found on the FCC website at <http://www.fcc.gov/oet/rfsafety/>.

## 2 Snapdragon™ 8655 Mobile Development Platform description

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This chapter provides a description of the Snapdragon™ 8655 Mobile Development Platform (MDP). The Snapdragon™ 8655 Mobile Development Platform is also referred to as “the device” in this document.



**Figure 2-1 The Snapdragon™ 8655 Mobile Development Platform**

The Mobile Station Modem™ (MSM)8655  **Snapdragon™ 8655 Mobile Development Platform** aims to promote QUALCOMM as a User eXperience (UX) and Multimedia (MM) leader through an early technology showcase vehicle.


The device provides:

- A robust multimedia-centric demonstration platform that showcases UX
- A multimedia development environment; the device showcases QUALCOMM's chipset capabilities in a cost-effective platform that is available well ahead of equipment provided by manufacturers external to QUALCOMM. This enables application developers to port or develop new applications and optimize the UX without having to wait for an OEM final product or prototype.

### 2.1 Device general features

The following are the major features of the device:

- MSM8655 with 1GHz Snapdragon™ Application processor
- 3.8" WVGA Display
  - Multi-touch capacitive touch screen
- Wi-Fi®, Bluetooth®, GPS
- 3D / 2D Graphics: Adreno™ 205 GPU

- See the  page at <http://developer.qualcomm.com/dev/android> for more information on Adreno tools.
- 720p Video Encode/Decode
- 12 MP Camera, Flash
  - 1MP secondary camera
    - Note that the hardware for the secondary camera is supported, however at this time, software is not supported. The secondary camera will be supported in software in Android™ 2.2 Froyo™.
- Audio
  - Stereo 16-mm loudspeakers
  - 2 Microphones (with QUALCOMM's Fluence™ technology)
- FM Radio
  - Note that the hardware for the FM Radio is supported, however at this time, software is not supported.
- Sensors
  - Note that the hardware for the sensors is supported, however at this time, software is not supported. Sensors will be supported in software in future releases of the SMDP.
  - Ambient Light Sensor
  - 3-axis Accelerometer
  - 3-axis gyro
  - Compass
  - Proximity Sensor
  - Temperature & Pressure Sensor
- Memory
  - 512MB LPDDR2
  - 1GB On-board NAND Flash
- Hard Keys
  - 2 rotary wheels with push
  - Camera button with half-press
  - On-off key / HW reset (recessed)
- Haptics
  - Dual, independently controlled linear vibrator motors.
- External connectors

- USB OTG micro - USB charging (USB 2.0 HS)
- HDMI™<sup>1</sup> type C
  - Camera and video playback only
    - HDMI supports video playback excluding audio at this time. Audio support can be enabled in future Android releases.
- 3.5mm Audio Jack
- SDIO (SDHC/SD 2.0)
  - The SMDP supports removable non-volatile memory devices compatible with the SD memory standard SDIO (version 2.0). An external miniSD slot is supported.
- Connectors by removing rear cover
  - SIM

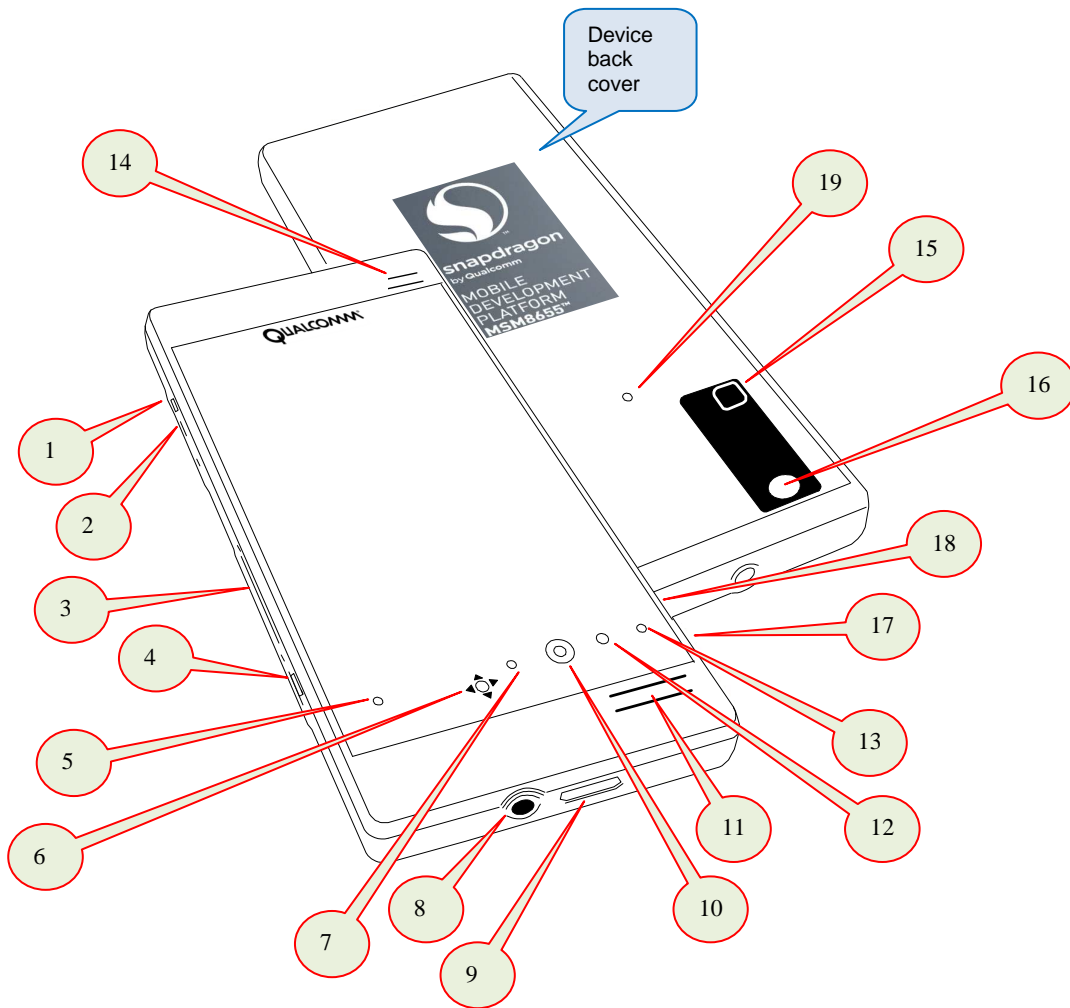
**NOTE:** At this time, not all listed features are supported in the current version of software. Please see the device software build release notes for more information.

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<sup>1</sup> HDMI, the HDMI Logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

## 2.2 Hardware description

Figure 2-2 Snapdragon™ 8655 Mobile Development Platform user-accessible interfaces shows the hardware, user interface, and input/output ports of the device.



- |   |                       |    |                        |    |  |
|---|-----------------------|----|------------------------|----|--|
| 1 | Volume selector       | 8  | Headset/A/V connector  | 15 | Camera flash LED                               |
| 2 | Reset switch          | 9  | HDMI connector         | 16 | Main camera                                    |
| 3 | miniSD™ slot          | 10 | Ambient light sensor   | 17 | Power button (on the side)                     |
| 4 | USB connector         | 11 | Front bottom speaker   | 18 | Camera thumbwheel (not supported at this time) |
| 5 | Front left microphone | 12 | Secondary camera       | 19 | Rear microphone                                |
| 6 | Optical mouse         | 13 | Front right microphone |    |  |
| 7 | Front mid microphone  | 14 | Front top speaker      |    |  |

Figure 2-2 Snapdragon™ 8655 Mobile Development Platform user-accessible interfaces

## 2.3 Device kit

Figure 2-3 Snapdragon™ 8655 Mobile Development Platform kit shows the device kit individual components.

Device, accessories, package contents:

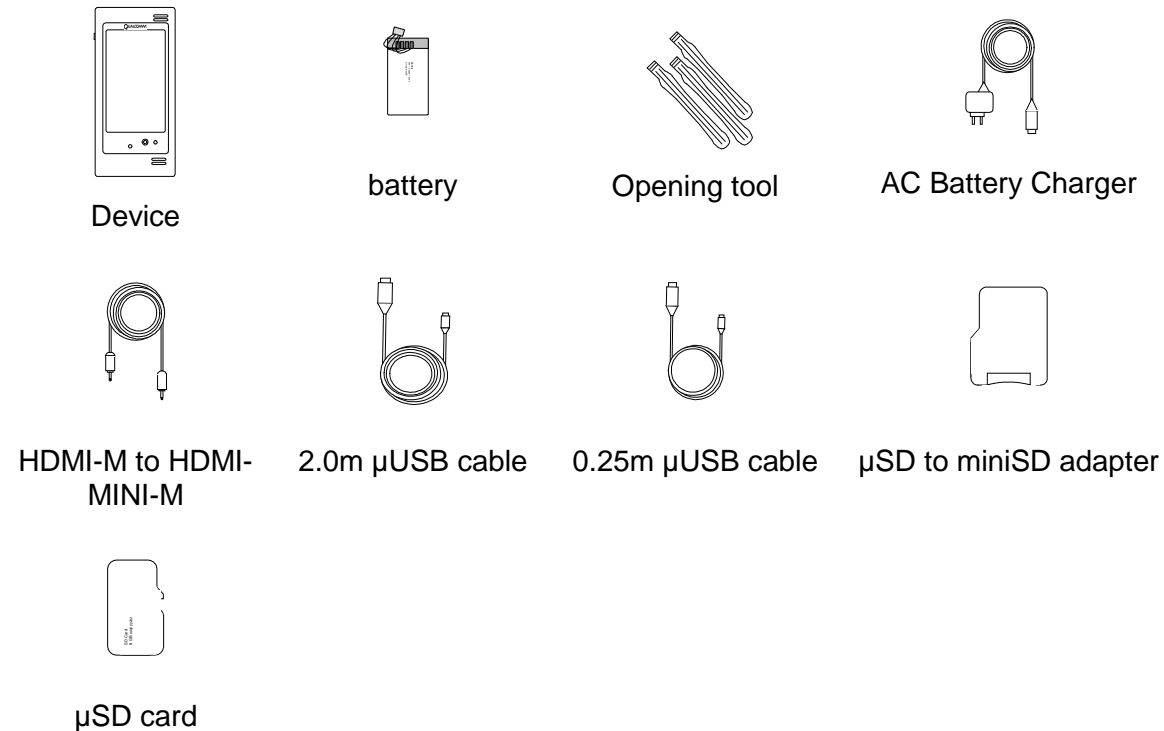


Figure 2-3 Snapdragon™ 8655 Mobile Development Platform kit

## 2.4 Removing protective covers on a new device

Before you use the device for the first time, it is recommended that you remove the two clear plastic protective covers:

- one on the display
- one on the main camera window

Removing the protective covers is necessary for correct touch screen, audio, and camera performance.

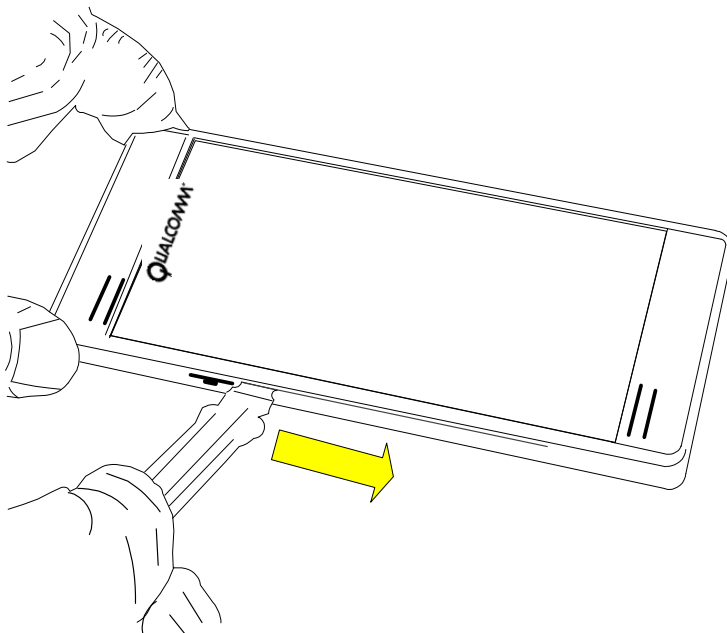
### 3 Snapdragon™ 8655 Mobile Development Platform assembly

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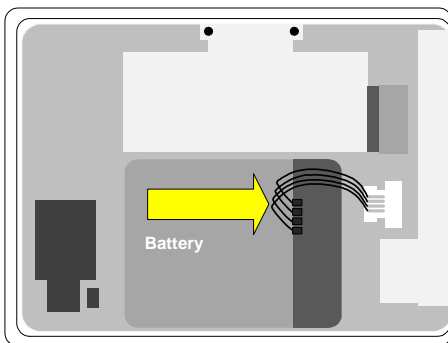
This chapter provides instructions for assembling the device in several configurations.

#### 3.1 Stand-alone device assembly

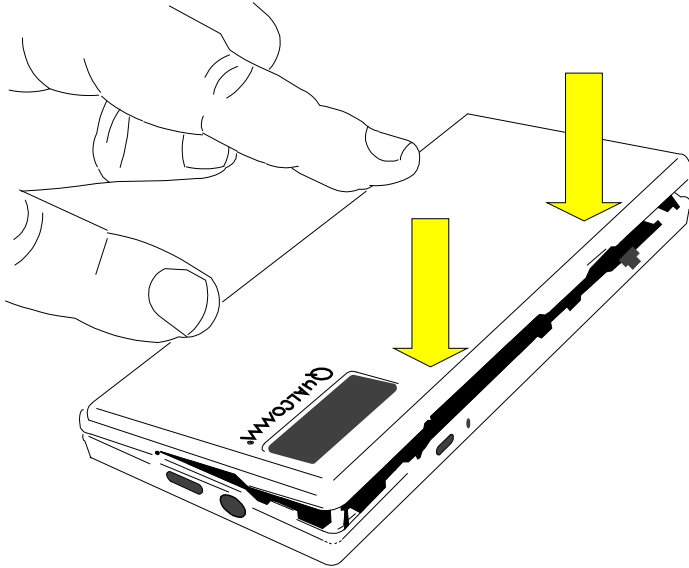
1. Remove the device's back cover using the opening tool; begin at the Call/Home/End button and continue along the perimeter. It is recommended that you use the opening tool with the curved end pointing upwards.



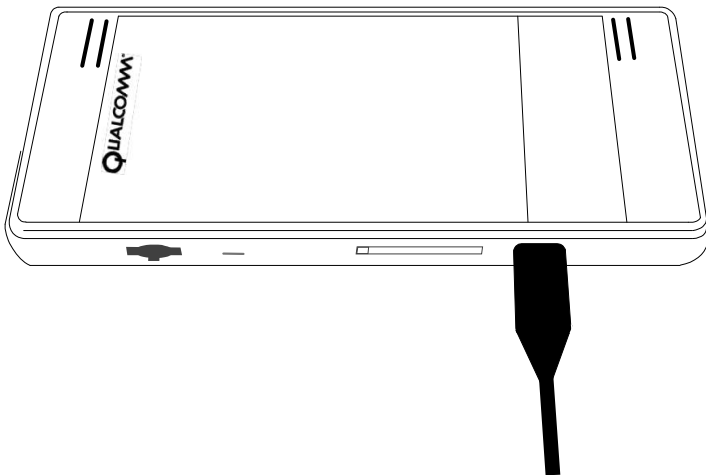
2. Install the battery.



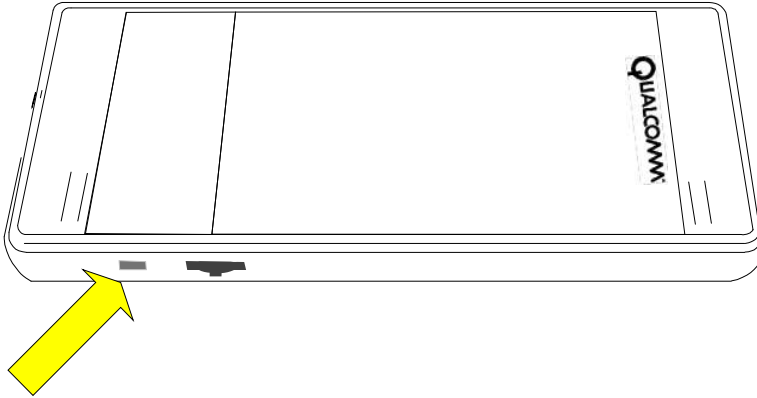
3. Install the back cover by snapping it along the perimeter (snap location is marked on picture). Begin snapping the cover from the battery area.



4. Connect the AC battery wall charger. Charge the device for at least 3 hours.



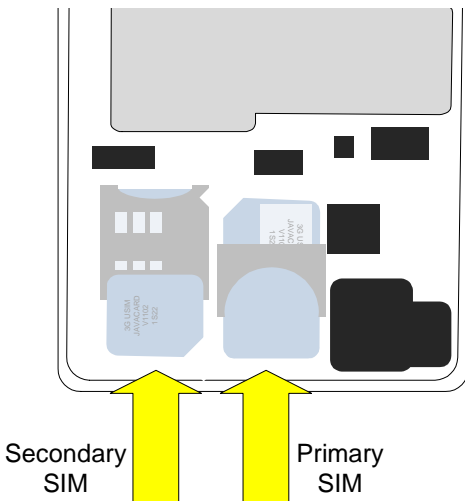
5. Power on the device by pressing the power button for 3 seconds.



## 3.2 Interfaces

### 3.2.1 SIM Cards

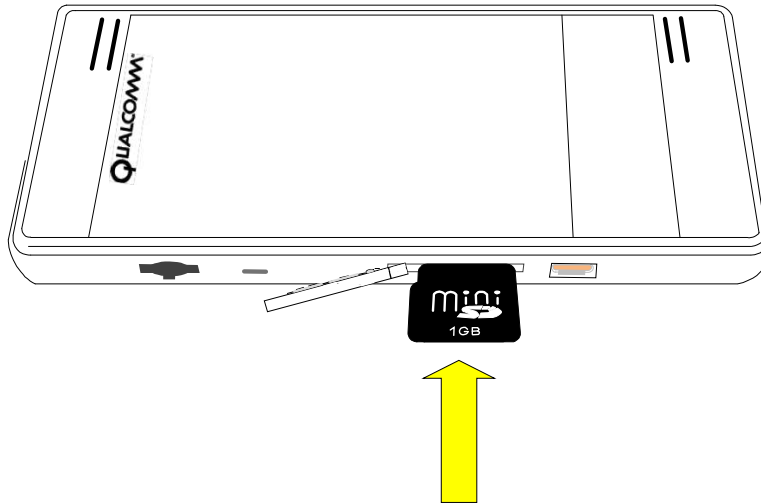
1. Primary and Secondary SIM card slots. Dual SIM slots are available for instances where a user may have 2 mobile phones; for example, a business phone and a personal phone.



### 3.2.2 Memory Cards

The miniSD card slot is located on the left side of the device

**NOTE:** The miniSD card seats about  $\frac{1}{8}$  inch inside the slot. A sharp Tool may be required to remove it.



There is a limited set of SD cards in the market that are compatible with the Snapdragon™ 8655 MDP. Regarding the SD card slot:

- use the QUALCOMM-provided card included in the device box (MicroSD + miniSD adaptor)
- or use one of the recommended devices.

Recommended devices:

- SanDisk® Mobile Ultra® 4G
- SanDisk® Mobile Ultra® 8G
- SanDisk® Extreme III® 2G

## 4 Snapdragon™ 8655 Mobile Development Platform operation

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This chapter describes and provides instructions for some of the device operations.

### 4.1 Device operation

#### Charging the battery

Connect the Snapdragon™ 8655 Mobile Development Platform charger to the micro-USB connector. For longer operations of the device, it is recommended to connect the charger to the device.

#### Starting up

The user should:

- First, power on the device (by pressing the power button for few seconds)
- Then connect the charger. Connecting the charger first may cause the device not to boot.

**NOTE:** Be careful not to push in the power button too forcefully, as it can sometimes get stuck.

It will take 5 to 10 seconds before the backlight comes up.

The full boot will take about 40 seconds.

For best performance, it is recommended that you let the device set idle for 30 or more seconds after initial boot-up.

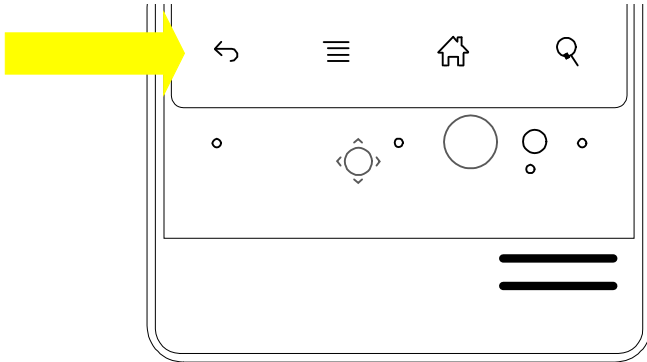
#### Powering down

Press the power button for ½ second to bring up the Android power-down menu.

#### 4.1.1 User Interface

##### Touch screen and softkeys

The User Interface (UI) navigation is based on touch and/or drag movements on the touch screen. In addition to the touch screen, the device has an extra touch-sensitive area, located below the screen. This area is used for 4 important “softkeys”:

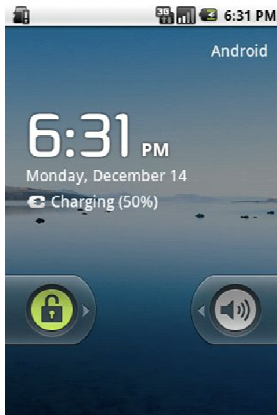


In every application, and unless it is specifically indicated otherwise:

- ↶ BACK will go back one menu level.
- ☰ MENU will open a contextual menu if one exists.
- 🏠 HOME will go to the home screen.
- 🔍 SEARCH opens search

### First steps

After power-up, you will see the Android locked screen:



Touch and drag the lock icon towards the right. This will unlock the screen and open up the user interface, depending on the value of the Default UI setting:

- Deep Sea UI, the QUALCOMM Demo 3D User Interface.
- Or, the regular Android UI – normally not used for demos.

**NOTE:** The Android UI is not normally used for demonstrations.

### **Changing the default UI setting to Deep Sea UI (Fluidplayer) if it was set to Android UI:**

- Press the Menu softkey (at center, below the screen) to open the main Android menu.
- Touch **Settings**
- Touch **Applications**
- Touch **Manage Applications**
- Press the **Menu** softkey (at center, below the screen)
- Touch **Filter** (bottom right)
- Select **All** as the filter
- Press the **Home** softkey (on the right, below the screen)
- Touch **Clear defaults**
- Select **Complete action using: Deep Sea UI.**

### **Changing the default UI setting to Android UI if it was set to Deep Sea UI:**

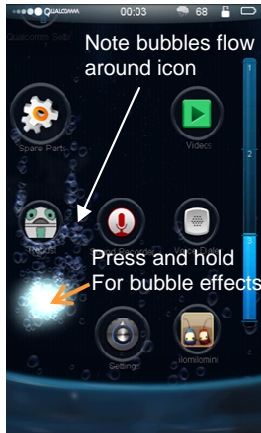
- In the main menu, touch **Settings**
- Touch **Applications**
- Touch **Manage Applications**
- Touch **Deep Sea UI**
- Touch **Clear defaults**
- Select **Complete action using: Home.**

### **Navigating the Deep Sea UI main screen**

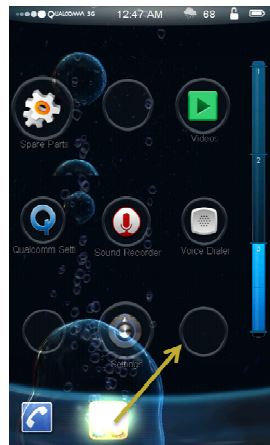
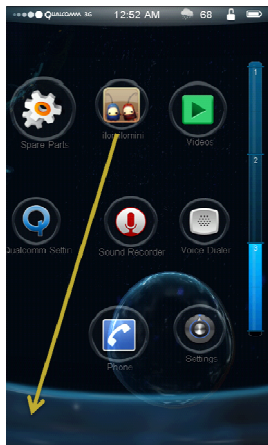
The main screen illustrates use of QUALCOMM technology to enhance the user experience with an undersea theme, including lighting, fog, and physical effects in a fun and interactive manner. It includes a 3D Sea Creature swimming around the UI. When you touch the screen, the sea creature will occasionally come forward and try to bite your finger.

The UI also includes:

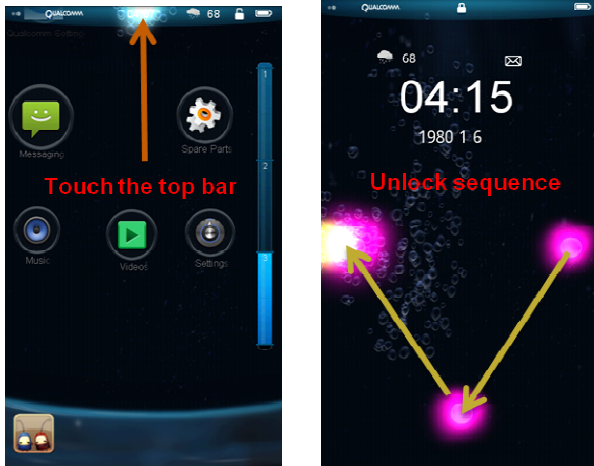
- application icons
- a side bar
- a quick launch bar:
- Press and hold anywhere in the touch screen to show interactive effects.



- Touch an icon to launch the corresponding application.
- Hold and drag the sidebar to navigate between icons.
- Hold and drag an icon to the quick launch bar (bottom of the screen) so it is always visible. Holding and dragging an icon away from the quick launch bar and onto one of the open slots will move it back to the main icon layout.




- Touch the top bar to lock the screen
- Swipe your finger as shown below to unlock the screen



## 4.1.2 Applications

### 4.1.2.1 Qualcomm Settings

The device has a number of settings targeted at specific applications. These are included in the Qualcomm Settings on the device.

Touch the  to open the Qualcomm Settings menu.

Menu options are briefly described in the following subsections.

#### 4.1.2.1.1 Dim screen

Enable/disable screen dim.

#### 4.1.2.1.2 Stay On Plugged

Disables power collapse and allows charging to occur.

#### 4.1.2.1.3 USB Mass Storage

Enable/disable USB mass storage.

#### 4.1.2.1.4 USB Remote Wakeup

Enable/disable USB remote wakeup.

#### 4.1.2.1.5 SD Polling

Enable/disable SD polling.

#### 4.1.2.1.6 Dual Microphone

Enable/disable dual microphones.

#### 4.1.2.1.7 USB Composition

Allows the user to set USB composition.

- DIAG + MODEM + NMEA + MSC
- MASS STORAGE

#### 4.1.2.1.8 Updating USB Driver in Windows Host environment

For instructions on updating the Windows Host USB Driver, see the BSQUARE Application Note: ***Installing USB driver for MDP Device on Windows***


#### 4.1.2.1.9 File manager

Allows the user to select the default file manager from the installed packages.

#### 4.1.2.1.10 Miscellaneous

##### 4.1.2.1.10.1 Wi-Fi

To set-up Wi-Fi on the device,

- Touch **Qualcomm Settings**  in the main menu
  - Touch **SD Polling** so that it is enabled
  - Return to the main menu
- Go back to the **Settings** menu from the main menu
- Select **Wireless and networks**
- Select "Wi-Fi"
  - Click it so that a check mark appears beside it (✓)
- Select **Wi-Fi settings**
  - The device begins to scan and detect available wireless networks and should display them
    - Note, if the user's wireless network is not detected, users can manually enter the network SSID name
    - Select **Add Wi-Fi network**
    - Enter network SSID name via touch screen keypad
  - Configure Wi-Fi as required.

- DNS Setup
  - There has been observed occurrences when connecting to a WiFi network, the MDP device cannot resolve a DNS IP address. If this occurs please perform the following steps to manually set your DNS.
    - On a computer connected to a WiFi network, open a **cmd** prompt and issue an **'ipconfig /all'**. Note the DNS IP address.
    - Connect your device to the computer.
    - Once device is connected issue in the cmd prompt enter **'adb shell setprop net.dns<#> <IP Value>'** Where <#> is 1, 2 or more determined by the number of DNS entries noted in step 1 and <IP Value> are the corresponding IP address noted in step 1.
      - Example: adb shell setprop net.dns1 xxx.xxx.xx.xxx
    - Your DNS is now set. To verify, launch your browser or issue **'adb shell ping <hostname>'** where <hostname> is a domain of your choice.
    - NOTE: If you power cycle your device you will need to perform these steps again.

#### 4.1.2.2 Treprn profiler

Treprn Profiler provides key insight into CPU, memory, and power utilization of applications. It supports measurement of:

- CPU Load
- Available Memory
- Battery Voltage
- Current Draw from HW Measurement Points
- Data Counters

Treprn Profiler allows developers to measure the power, memory, and CPU impact of their applications in real-time.

In addition to basic profiling information, Treprn Profiler adds graphing/logging of current draw from dedicated hardware test points.

Real-time graphing and logging to a file is also supported.

Treprn must be obtained from this link <http://developer.qualcomm.com/Treprn>

#### 4.1.2.3 Adreno Profiler

Adreno Profiler is a performance profiling and debugging application for 3D content running on QUALCOMM platforms. It provides optimization, per-frame analysis, and real-time performance counter visualization. See <http://developer.qualcomm.com/dev/android/tools> and <http://developer.qualcomm.com/showcase/adreno-profiler>

#### 4.1.2.4 Neocore

Neocore is an OpenGL ES 1.0 benchmark. It highlights the Adreno 130 GPU capabilities. See <http://www.qualcomm.com/videos/neocore> and <http://www.androlib.com/android.application.com-qualcomm-qx-neocore-BwF.aspx>