

Android™ Quick Start Guide

Contents

1 Overview

This document guides you through the processes of downloading and running this release package. It only explains how to download and run the default release image with default configuration. For details on using the release package, see the *Android™ User's Guide* (AUG) included in this release package.

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2 Hardware Requirements

The hardware requirements for using this release package are as follows:

Supported system-on-chips (SoCs):

- i.MX 7ULP

Supported boards:

- EVK Rev. A/A2 board

3 Working with the i.MX 7ULP EVK Board



3.1 Board hardware

The figure below shows the different components of the i.MX 7ULP EVK Rev. A board.

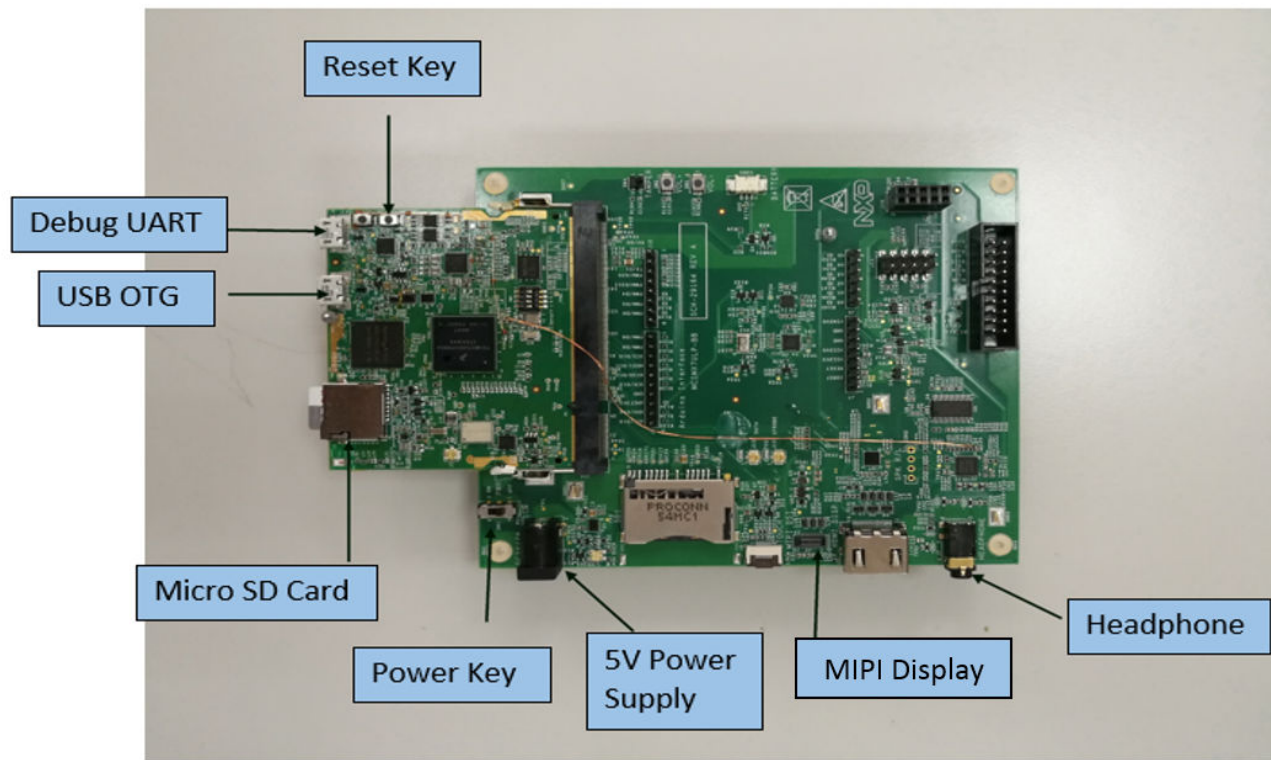


Figure 1. i.MX 7ULP EVK board

The default hardware of a board is configured for HDMI display, which is not yet supported in this release, so the board needs the following hardware rework to support the MIPI display:

- Remove the resistors: R41 (0 ohm), R43-R46 (0 ohm), R51 (0 ohm)
- Populate the resistors: R30-R35 (0 ohm)

3.2 Board images

The table below describes the location in the board partitions of the software images in android_N7.1.2_1.1.0_7ULP-PRC_image_7ulpevk.tar.gz.

Table 1. Board images

Image name	Path in release package	Download target
u-boot-imx7ulp.imx	\	SD 1k offset
boot-imx7ulp.img	\	SD 1st partition
recovery-imx7ulp.img	\	SD 2nd partition

Table continues on the next page...

Table 1. Board images (continued)

system.img	\	SD 3rd partition
partition-table.img	\	Program to first 17k, and then back up to last LBA. u-boot-imx7ulp.imx covers it from offset 1k.
imx7ulp_m4_demo.img	\	It is built out from the power_mode_switch demo in the SDK 2.2 Beta release for i.MX 7ULP. The ARM Cortex-M4 image on QSPI is a requirement for i.MX 7ULP SoC.

3.3 Flashing board images

The board images can be flashed to the target board by using the MFGTool. The release package includes MFGTool for i.MX 7ULP in android_tools.tar.gz. The MFGTool is mfgtools.tar.gz.

NOTE

The MFGTool only works in Windows OS environment.

Perform the following steps to flash the board images:

1. Unzip the mfgtools.tar.gz file to a selected location. The directory is named MFGTool-Dir in this example.
2. If the directory does not exist, create the "android/evk" directory under the <MFGTool-Dir>/Profiles/Linux/OS Firmware/files path.
3. Copy the following files from release_package/android_N7.1.2_1.1.0_7ULP-PRC_image_7ulp.tar.gz to your <MFGTool-Dir>/Profiles/Linux/OS Firmware/files/android/evk directory.
 - u-boot-imx7ulp.imx
 - boot-imx7ulp.img
 - system.img
 - recovery-imx7ulp.img
 - partition-table.img
 - imx7ulp_m4_demo.img

NOTE

Do not replace other files in files directory and OS firmware directory.

4. Change the board's SW1 (boot mode) to 0101 (from 1-4 pin) to enter flash mode.
5. Power on the board. Use USB cable on the board OTG port, and connect a computer running Windows OS with the board. Connect the debug UART with the computer to watch the boot processing.

NOTE

There are two USB micro ports on the i.MX 7ULP EVK board: USB to UART, USB OTG. The USB to UART can be referenced as debug UART, and the USB OTG can be referenced as USB in the hardware image above. The debug UART can be used to watch the log of the hardware boot processing.

- Double-click the *.vbs file according to the target device as shown in the following table.

Table 2. MFGTool VBS file

Target device and boot storage	VBS file
i.MX 7ULP EVK SD	mfgtool2-android-mx7ulp-evk-sd.vbs

- Click Start to start flashing images.

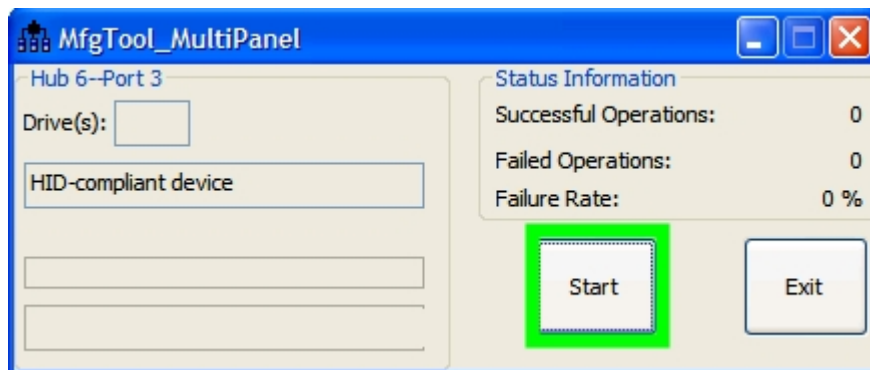


Figure 2. Starting flash

The figure below shows flashing in progress, and the status bar shows the flash status. The flash may take one to two minutes depending on the host machine.

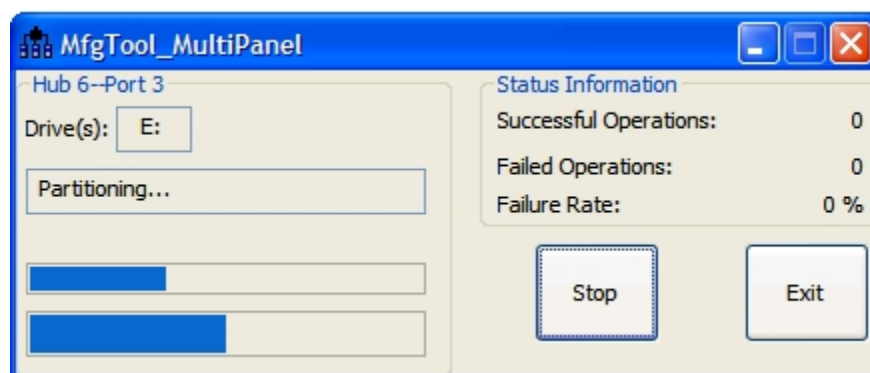


Figure 3. Download status

The figure below shows the tool when the flash is complete.



Figure 4. Download complete

8. Click Stop and disconnect the USB cable.
9. Change SW1 (boot mode) to 1001 (from 1 bit to 4 bit). Change SW1 to switch the board back to SD boot mode.

3.4 Booting with single display: MIPI display

HDMI is the default hardware configuration, but it is not supported yet. Only the MIPI display is supported, but it needs to do hardware rework before being used, as described in Section 3.1.

After flashing the images, boot the board by connecting it to the power supply.

In the U-Boot prompt, set the U-Boot environment variables as shown below:

```
U-Boot > setenv bootcmd boota mmc0
U-Boot > setenv bootargs console=ttyLP0,115200 init=/init androidboot.console=ttyLP0
consoleblank=0 androidboot.hardware=freescale vmalloc=128M cma=448M buildvariant=user
U-Boot > saveenv
```

With the settings above, the Android platform does not start the shell console. It enables the default Android selinux and dm_verity security features, which restrict users to change the system and detect the system's information. To avoid this, "androidboot.selinux=permissive" and "androidboot.dm_verity=disabled" need to be appended to the U-Boot's bootargs. Boot environment variables are as follows:

```
U-Boot > setenv bootcmd boota mmc0
U-Boot > setenv bootargs console=ttyLP0,115200 init=/init androidboot.console=ttyLP0
consoleblank=0 androidboot.hardware=freescale vmalloc=128M cma=448M buildvariant=user
androidboot.selinux=permissive androidboot.dm_verity=disabled
U-Boot > saveenv
```

3.5 Board reboot

After you have completed flashing and setup, reboot the board and wait for the Android platform to boot up.



Figure 5. Android Nougat image

4 Revision History

Table 3. Revision history

Revision number	Date	Substantive changes
N7.1.2_1.1.0_7ULP-PRC	06/2017	Initial release

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Document Number: AQSUG
Rev. N7.1.2_1.1.0_7ULP-PRC
06/2017

