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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 Android User's Guide included in this release package.

2 Hardware Requirements

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

Supported system-on-chips (SoCs):

- i.MX 6Dual/6Quad
- i.MX 6Solo/6DualLite
- i.MX 6SoloLite

Supported boards:

- SABRE-SD board and platform
- SABRE-AI board
- EVK board

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3 Working with SABRE-SD Board

3.1 Board hardware

The figure below shows the different components of the SABRE-SD board.

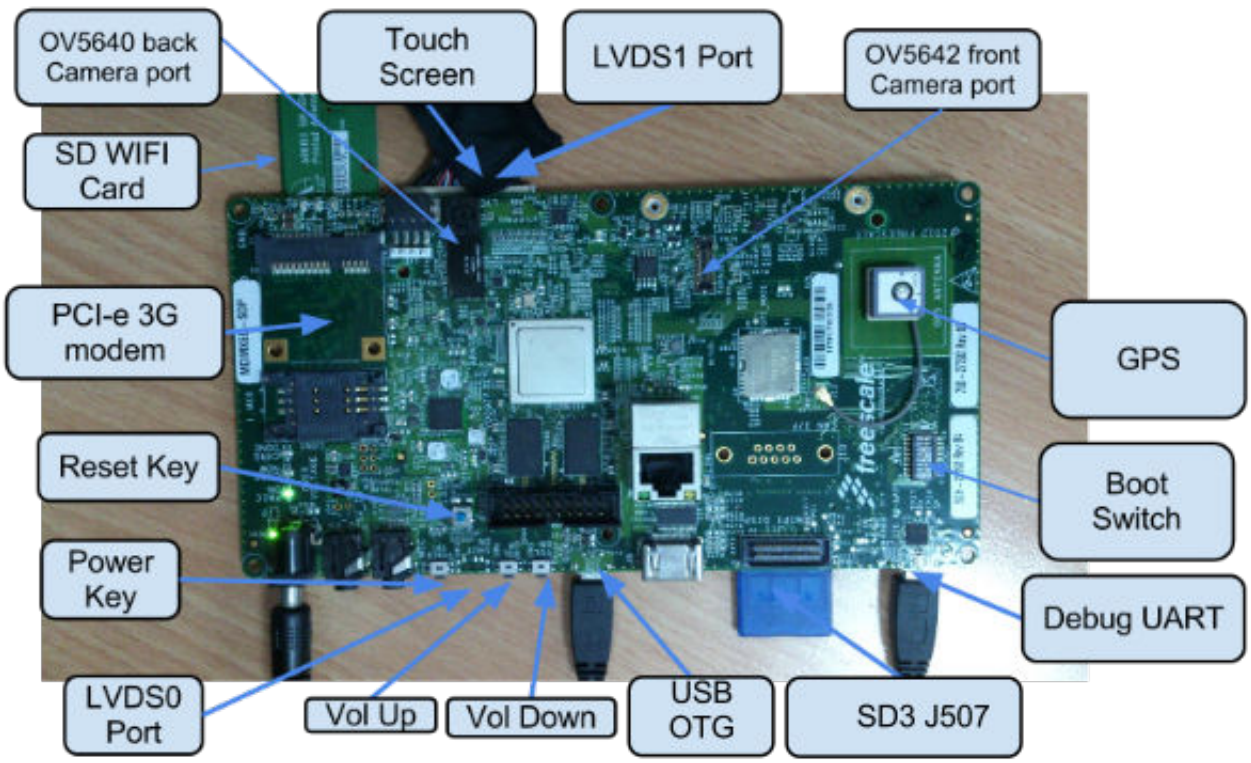

Figure 1. SABRE-SD Board

NOTE

Due to a known limitation of the hardware/SoC, the power key on the RevB or older versions of the SABRE-SD board cannot be used as the normal power key. So, the VOL_DOWN key is mapped as the power key. The VOL_DOWN key was not available on early boards.

3.2 Board images

The table below describes the locations of the software images in release_package/android_kk4.4.2_1.0.0-ga_full_image_6qsabresd.tar.gz on board partitions.

Table 1. Board images

Image name	Path in release package	Download target
u-boot-6q.bin	\	eMMC first 8MB section

Table continues on the next page...

Table 1. Board images (continued)

u-boot-6dl.bin	\	eMMC first 8MB section
boot.img	\eMMC	eMMC 1st partition
recovery.img	\eMMC	eMMC 2nd partition
system.img	\eMMC	eMMC 5th partition

3.3 Downloading board images

The board images can be downloaded to the target board by using the MFGTool. The release package includes MFGTool for both i.MX 6Dual/6Quad and i.MX 6Solo/6DualLite in android_kk4.4.2_1.0.0-ga_tools.tar.gz. The MFGTool for i.MX 6Dual/6Quad is Mfgtools-Rel-*_MX6Q_UPDATER.tar.gz. The MFGTool for i.MX 6Solo/6DualLite is Mfgtools-Rel-*_MX6DL_UPDATER.tar.gz.

NOTE

The MFGTool only works in Windows operating system environment.

Perform the following steps to download the board images:

NOTE

The steps given below take i.MX 6Dual/6Quad as the example SoC. For i.MX 6Solo/6DualLite, replace 'MX6Q' with 'MX6DL' and '6q' with '6dl.'

1. Unzip the Mfgtools-Rel-*_MX6Q_UPDATER.tar.gz file to a selected location. The directory is named MFGTool-Dir in this example.
2. If the directory is not already there, create the "*android*" directory under the *MFGTool-Dir/Profiles/MX6Q Linux Update/OS Firmware/files* directory.
3. Copy the following files from either android_kk4.4.2_1.0.0-ga_core_image_6qsabresd.tar.gz or android_kk4.4.2_1.0.0-ga_full_image_6qsabresd.tar.gz to the MFGTool-Dir/Profiles/MX6Q Linux Update/OS Firmware/files/android/ directory.
   - u-boot-6q.bin
   - eMMC/boot.img
   - eMMC/system.img
   - eMMC/recovery.img

   NOTE

   Do not replace any other files in the files directory and the OS Firmware directory. For SD images, please use the images from the "SD" directory in the pre-built images package.
4. No dedicated boot dips are reserved for serial download mode on SABRE-SD board. Therefore, a tricky method is used to enter serial download mode. Change the SABRE-SD SW6 (boot) to 00001100 (from 1-8 bit) to enter download mode.
5. Power on the board. Using USB cable on the SABRE-SD OTG port, connect your Windows computer to the SABRE-SD board.

   NOTE

   There are two USB micro ports on the SABRE-SD board: USB to UART and USB OTG. USB to UART is referred to as debug UART, and the USB OTG is referred to as USB in the hardware image above. The debug UART can be used to monitor the log of the hardware boot processing.
6. Update the MFGTool-Dir/cfg.ini file as follows:

Target device and boot storage	[platform] and [LIST] settings
i.MX 6Dual/6Quad SABRE-SD eMMC	[platform] board = SabreSD [LIST] name = Android-SabreSD-eMMC
i.MX 6Dual/6Quad SABRE-SD SD	[platform] board = SabreSD [LIST] name = Android-SabreSD-SD
i.MX 6Solo/ 6DualLite SABRE-SD eMMC	[platform] board = SabreSD [LIST] name = Android-SabreSD-eMMC
i.MX 6Solo/ 6DualLite SABRE-SD SD	[platform] board = SabreSD [LIST] name = Android-SabreSD-SD

7. Start the MFGTool by clicking the MFGTool2.exe[1] file under the MFGTool-Dir directory. The user interface of this tool should be set up as shown in the below figure.

Figure 2. MFGTool user interface

8. Click Start to start downloading images.

1. MFGTool2 means MFGTool Version 2. This version improves stability and compatibility.

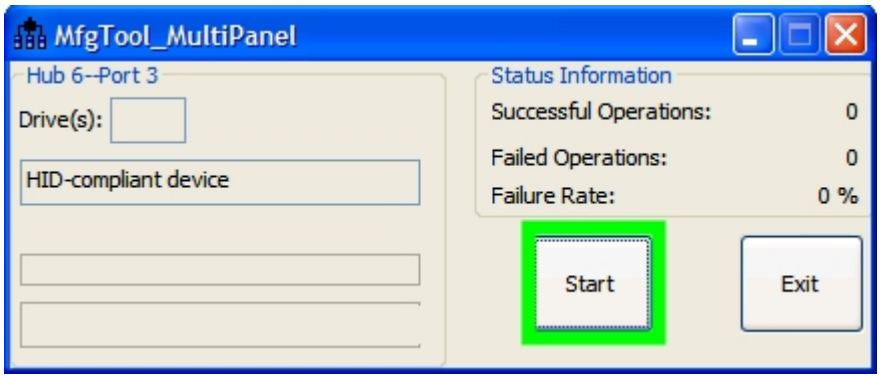

Figure 3. Starting download

The figure below shows the downloading in progress where the status bar shows the download status. The download may take one to two minutes depending on the host machine.

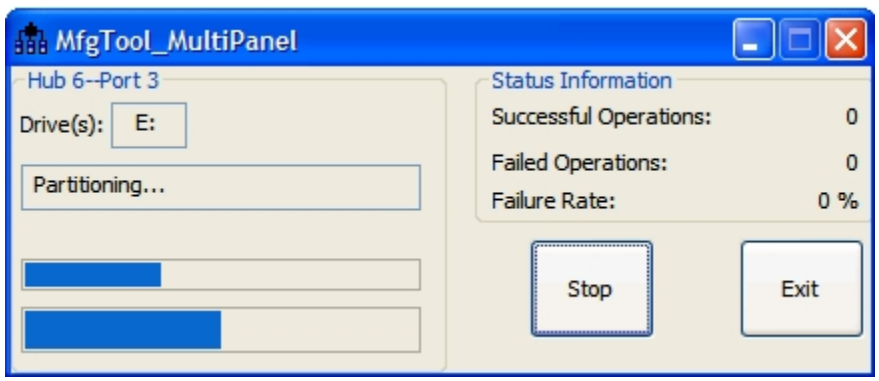

Figure 4. Download status

The figure below shows the tool once the download is complete.

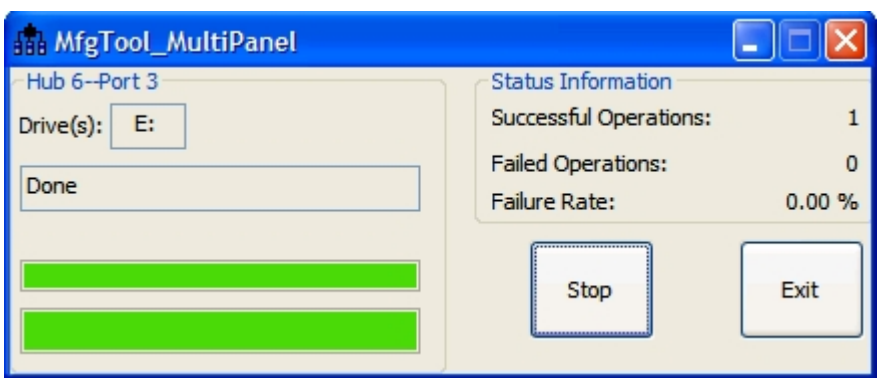

Figure 5. Download complete

9. Click Stop.
10. Change "Boot Switch(SW6)" to 11100110 (from 1-8 bit) to switch the board back to eMMC 4-bit boot mode. Or change "Boot Switch(SW6)" to 11010110 (from 1-8 bit) to switch the board back to eMMC 8-bit boot mode.

3.4 Booting

After downloading the images, you can boot the board by connecting it to the power supply.

There are three hardware displays supported in this release: two LVDS display panels and HDMI output. See Booting with single display: LVDS display to enable the LVDS1 display. See Booting with single display: HDMI display to enable single HDMI display. See Booting with dual displays: LVDS and HDMI displays to enable LVDS1 and HDMI output dual display feature.

NOTE

There are two LVDS ports in SABRE SD hardware: LVDS0 and LVDS1. LVDS1 is taken as the primary display in this release. The LVDS1 port is nearby miniPCIe interface (see the SABRE-SD board image above).

3.4.1 Booting with single display: LVDS display

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

```
U-Boot > setenv bootcmd booti mmc3
U-Boot > setenv bootargs console=ttymxc0,115200 init=/init video=mxcfb0:dev=ldb,bpp=32
video=mxcfb1:off video=mxcfb2:off fbmem=10M fb0base=0x27b00000 vmalloc=400M
androidboot.console=ttymxc0 androidboot.hardware=freescale
U-Boot > saveenv
```

3.4.2 Booting with single display: HDMI display

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

```
U-Boot > setenv bootcmd booti mmc3
U-Boot > setenv bootargs console=ttymxc0,115200 androidboot.console=ttymxc0 vmalloc=400M
init=/init video=mxcfb0:dev=hdmi,1920x1080M@60,bpp=32 video=mxcfb1:off video=mxcfb2:off
fbmem=28M androidboot.hardware=freescale
U-Boot > saveenv
```

3.4.3 Booting with dual displays: LVDS and HDMI displays

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

```
U-Boot > setenv bootcmd booti mmc3
U-Boot > setenv bootargs console=ttymxc0,115200 androidboot.console=ttymxc0
fb0base=0x27b00000 vmalloc=400M init=/init video=mxcfb0:dev=ldb,bpp=32 video=mxcfb1:dev=hdmi,
1920x1080M@60,bpp=32 video=mxcfb2:off fbmem=10M,28M androidboot.hardware=freescale
U-Boot > saveenv
```

3.5 Board reboot

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

Figure 6. Android KitKat image

4 Working with SABRE-AI Board

4.1 Board hardware

The figure below shows the different components of the SABRE-AI board.

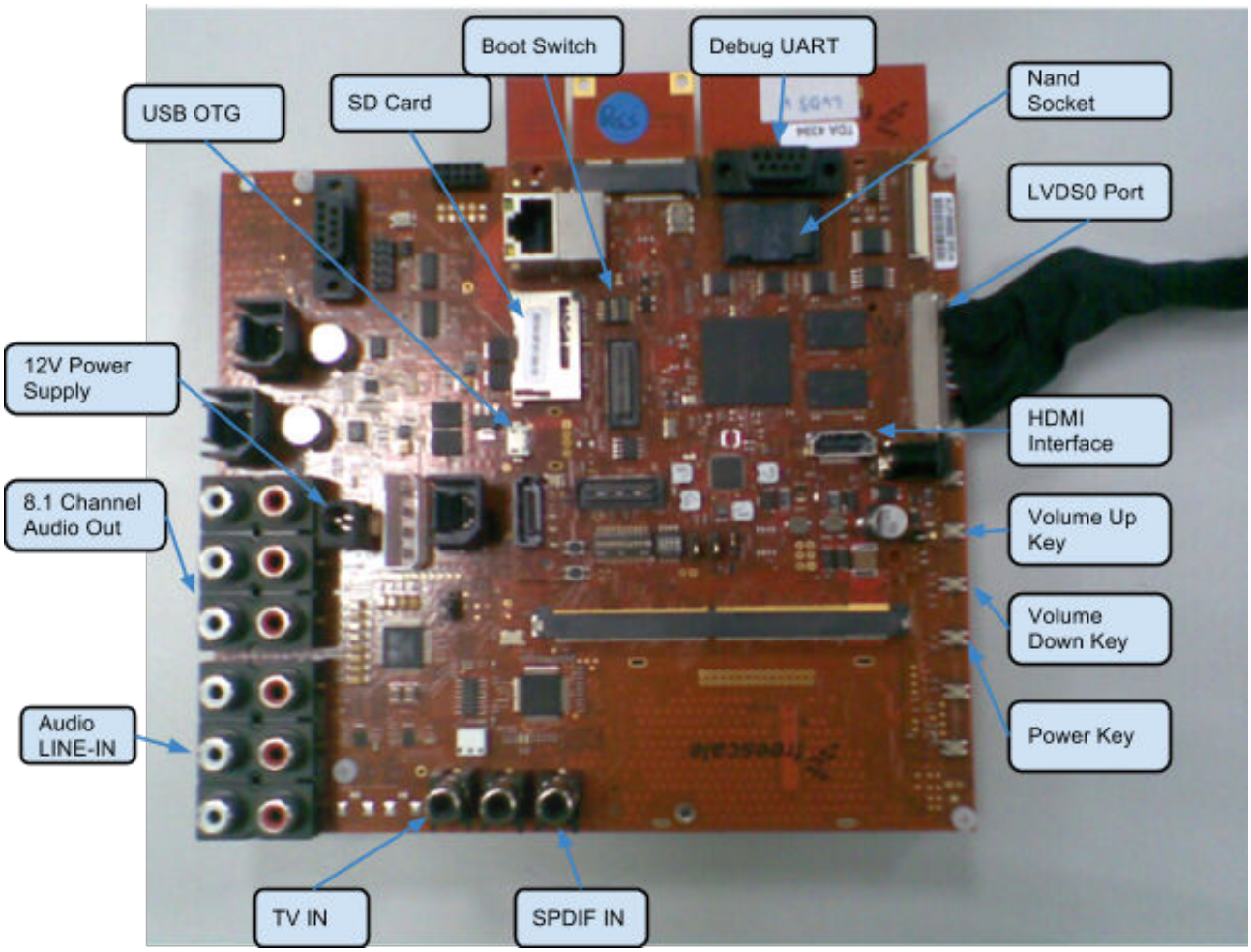

Figure 7. SABRE-AI board

4.2 Board images

The table below describes the location in the board partitions of the software images in android_kk4.4.2_1.0.0-ga_full_image_6qsabreauto.tar.gz on board partitions.

Table 2. Board images

Image name	Path in release package	Download target
u-boot-mx6q.bin u-boot-mx6dl.bin u-boot-mx6solo.bin	\	SD first 8MB block
boot.img	\SD	SD 1st partition
recovery.img	\SD	SD 2nd partition
system.img	\SD	SD 5th partition

4.3 Downloading board images

The board images can be downloaded to the target board by using the MFGTool. The release package includes MFGTool for both i.MX 6Dual/6Quad and i.MX 6Solo/6DualLite in android_kk4.4.2_1.0.0-ga_tools.tar.gz. The MFGTool for i.MX 6Dual/6Quad is Mfgtools-Rel-*_MX6Q_UPDATER.tar.gz. The MFGTool for i.MX 6Solo/6DualLite is Mfgtools-Rel-*_MX6DL_UPDATER.tar.gz.

NOTE

The MFGTool only works in Windows operating system environment.

Perform the following steps to download the board images:

NOTE

The steps given below take i.MX 6Dual/6Quad as the example SoC. For i.MX 6Solo/6DualLite, replace 'MX6Q' with 'MX6DL' and '6q' with '6dl.'

1. Unzip the Mfgtools-Rel-*_MX6Q_UPDATER.tar.gz file to a selected location. The directory is named MFGTool-Dir in this example.
2. If the directory is not already there, create the "*android*" directory under the *MFGTool-Dir/Profiles/MX6Q Linux Update/OS Firmware/files* directory.
3. Copy the following files from the *release_package/android_kk4.4.2_1.0.0-ga_image_6qsabresd.tar.gz* to the *MFGTool-Dir/Profiles/MX6Q Linux Update/OS Firmware/files/android/* directory.
   - u-boot-6q.bin
   - SD/boot.img
   - SD/system.img
   - SD/recovery.img

NOTE

Do not replace any other files in the files directory and the OS Firmware directory. When using the NAND boot, the files are in “nand” folder, and use android_root.img instead system.img. The boot loader should be u-boot-mx6q-nand.bin.

To download images for i.MX 6Solo/6DualLite SABRE-AI boards, please replace the name "MX6Q" in step 1~3 with "MX6DL" for i.MX 6Solo/6DualLite SABRE-AI Boards. The boot loader for i.MX 6DualLite should be u-boot-mx6dl.bin. The boot loader for i.MX 6Solo should be u-boot-mx6solo.bin

4. Change SABRE-AI S3 (boot mode) to 0101 (from 1-4 bit) to enter download mode.
5. Power on the board. Using USB cable on the SABRE-AI OTG port, connect your Windows computer to the SABRE-AI board.

NOTE

The USB micro port in SABRE-AI is J10.

6. Update the MFGTool-Dir/cfg.ini file according to the target device as shown in the below table.

Table 3. SABRE-AI cfg.ini settings

Target device	[platform] and [LIST] settings
i.MX 6Dual/6Quad SABRE-AI SD	`[platform]` `board = SabreAuto`

Table continues on the next page...

Table 3. SABRE-AI cfg.ini settings (continued)

	[LIST] name = Android-MX6Q-SabreAuto-SD
i.MX 6Dual/6Quad SABRE-AI NAND	[platform] board = SabreAuto [LIST] name = Android-MX6Q-SabreAuto-NAND
i.MX 6Solo/6DualLite SABRE-AI SD	[platform] board = SabreAuto [LIST] name = Android-MX6DL-SabreAuto-SD
i.MX 6Solo/6DualLite SABRE-AI NAND	[platform] board = SabreAuto [LIST] name = Android-MX6DL-SabreAuto-NAND

7. Start the MFGTool by clicking MFGTool2.exe under MFGTool-Dir. The user interface of this tool should be set up as shown in the below figure.

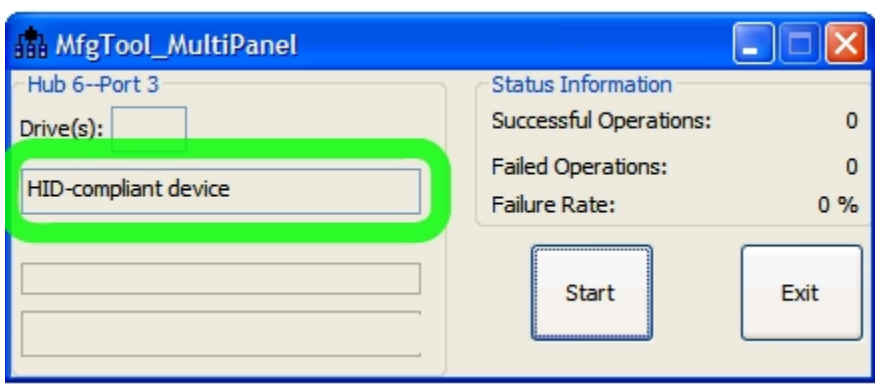

Figure 8. MFGTool user interface

8. Click Start to start downloading images.

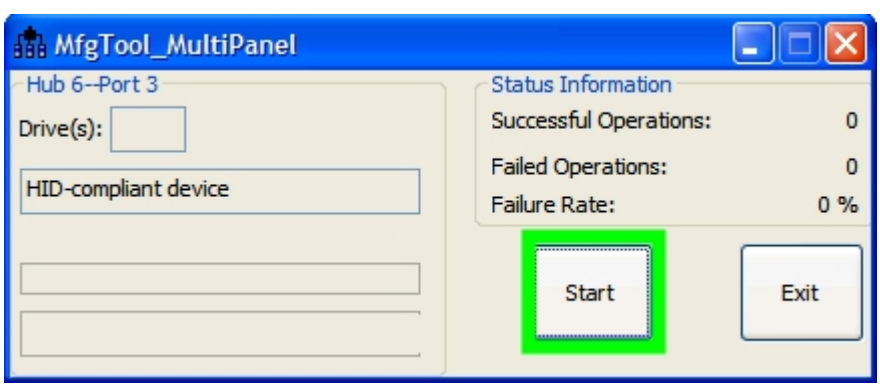

Figure 9. Starting download

The figure below shows the downloading in progress where the status bar shows the download status. The download may take one to two minutes depending on the host machine.

Figure 10. Download status

The figure below shows the tool once the download is complete.

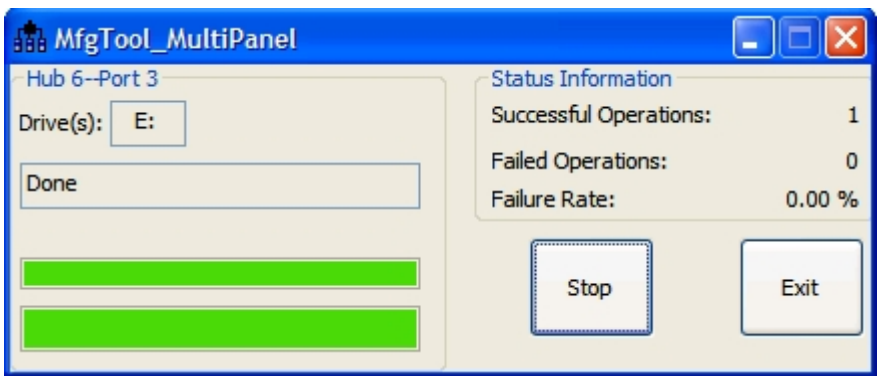

Figure 11. Download complete

9. Click Stop.
10. Change the board boot switch to (S3, S2,S1) 0010, 0010,0100100000 (from 1 bit) to boot from SD on CPU Board .

    Change the board boot switch to (S3, S2,S1) 0010, 0001,0001000000 (from 1bit) to boot from NAND

4.4 Booting

After downloading the images, you can boot the board by connecting the power supply. There are two hardware displays supported in this release: one LVDS display panel and one HDMI output. To enable the LVDS0 display, please refer to the Booting with single display: LVDS display topic. Please refer to Booting with dual displays: LVDS and HDMI displays to enable LVDS0 and HDMI output dual display feature.

NOTE

There are two LVDS ports in SabreAuto hardware, LVDS0 and LVDS1. LVDS0 is taken as the primary display in this release. The LVDS0 port is in the CPU board. The LVDS1 is in the base board.

4.4.1 Booting with single display: LVDS display

To boot from SD, set the U-Boot environment variables as show below:

```
U-Boot > setenv bootcmd booti mmc2
U-Boot > setenv bootargs console=ttymxc3,115200 init=/init video=mxcfb0:dev=ldb,bpp=32
video=mxcfb1:off video=mxcfb2:off fbmem=10M vmalloc=400M androidboot.console=ttymxc3
androidboot.hardware=freescale
U-Boot > saveenv
```

To boot from NAND, set the U-Boot environment variables as shown below:

```
U-Boot > setenv bootcmd nand read 0x12800000 0x1000000 0x800000;booti 0x12800000
U-Boot >  setenv bootargs console=ttymxc3,115200 androidboot.console=ttymxc3 vmalloc=400M
init=/init video=mxcfb0:dev=hdmi,1920x1080M@60,bpp=32 video=mxcfb1:off video=mxcfb2:off
fbmem=28M androidboot.hardware=freescale mtdparts=gpmi-nand:16m(bootloader),16m(bootimg),
128m(recovery),-(root) ubi.mtd=3
U-Boot > saveenv
```

4.4.2 Booting with single display: HDMI display

To boot from SD, set the U-Boot environment variables as shown below:

```
U-Boot > setenv bootcmd booti mmc2
U-Boot > setenv bootargs console=ttymxc3,115200 androidboot.console=ttymxc3 vmalloc=400M
init=/init video=mxcfb0:dev=hdmi,1920x1080M@60,bpp=32 video=mxcfb1:off video=mxcfb2:off
fbmem=28M androidboot.hardware=freescale
U-Boot > saveenv
```

To boot from NAND, set the U-Boot environment variables as shown below:

```
U-Boot > setenv bootcmd nand read 0x12800000 0x1000000 0x800000;booti 0x12800000
U-Boot > setenv bootargs console=ttymxc3,115200 androidboot.console=ttymxc3 vmalloc=400M
init=/init video=mxcfb0:dev=hdmi,1920x1080M@60,bpp=32 video=mxcfb1:off video=mxcfb2:off
fbmem=28M androidboot.hardware=freescale mtdparts=gpmi-nand:16m(bootloader),16m(bootimg),
128m(recovery),-(root) ubi.mtd=3
U-Boot > saveenv
```

4.4.3 Booting with dual displays: LVDS and HDMI displays

To boot from SD, set the U-Boot environment variables as shown below:

```
U-Boot >  setenv bootcmd booti mmc2
U-Boot > setenv bootargs console=ttymxc3,115200 androidboot.console=ttymxc3 vmalloc=400M
init=/init video=mxcfb0:dev=ldb,bpp=32 video=mxcfb1:dev=hdmi,1920x1080M@60,bpp=32
video=mxcfb2:off fbmem=10M,28M androidboot.hardware=freescale
U-Boot > saveenv
```

To boot from NAND, set the U-Boot environment variables as shown below:

```
U-Boot >  setenv bootcmd nand read 0x12800000 0x1000000 0x800000;booti 0x12800000
U-Boot > setenv bootargs console=ttymxc3,115200 androidboot.console=ttymxc3 vmalloc=400M
init=/init video=mxcfb0:dev=ldb,bpp=32 video=mxcfb1:dev=hdmi,1920x1080M@60,bpp=32
video=mxcfb2:off fbmem=10M,28M androidboot.hardware=freescale mtdparts=gpmi-nand:
16m(bootloader),16m(bootimg),128m(recovery),-(root) ubi.mtd=3
U-Boot > saveenv
```

4.5 Board reboot

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

Figure 12. Android KitKat image

5 Working with i.MX 6 SoloLite EVK Board

5.1 Board hardware

The figure below shows the different components of the SoloLite EVK board.

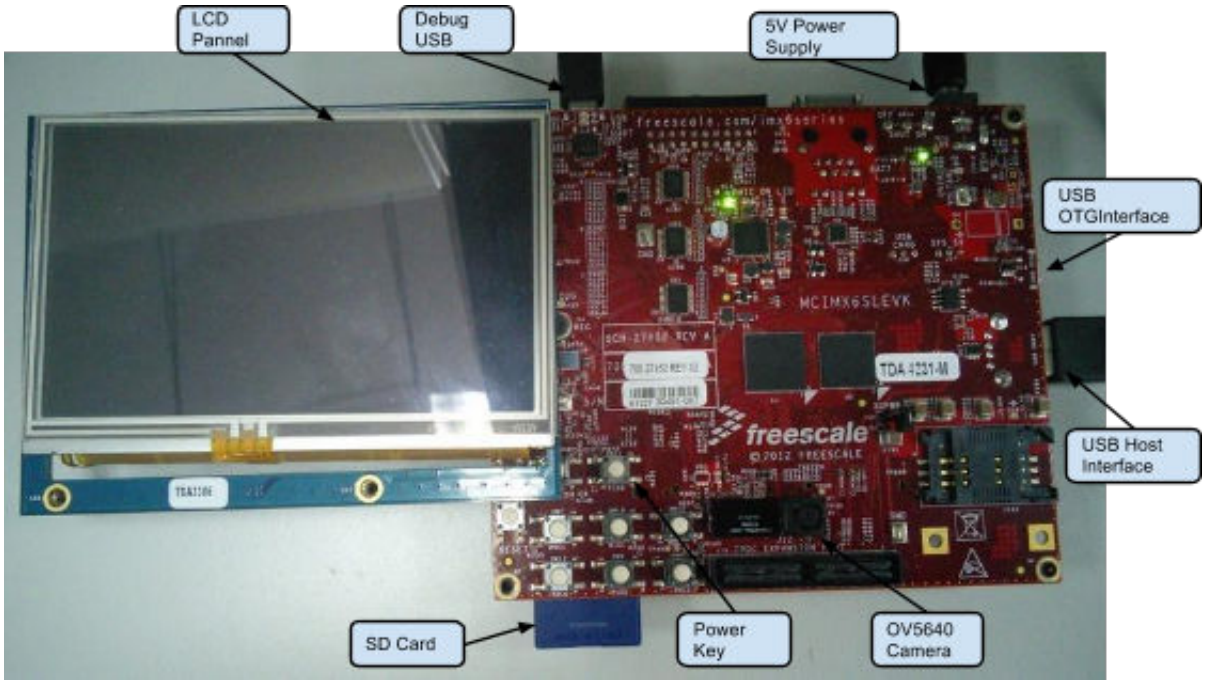

Figure 13. i.MX 6 SoloLite EVK board

5.2 Board images

The table below describes the location in the board partitions of the software images in android_kk4.4.2_1.0.0-ga_core_image_6slevk.tar.gz on board partitions.

Table 4. Board images

Image name	Path in release package	Download target
u-boot-mx6sl.bin	\	SD first 8MB block
boot.img	\SD	SD 1st partition
recovery.img	\SD	SD 2nd partition
system.img	\SD	SD 5th partition

5.3 Downloading board images

The board images can be downloaded to the target board by using the MFGTool. The release package includes MFGTool for i.MX 6Dual/6Quad, i.MX 6Solo/6DualLite and i.MX 6SoloLite in android_kk4.4.2_1.0.0-ga_tools.tar.gz. The MFGTool for i.MX 6SoloLite is Mfgtools-Rel-*_MX6SL_UPDATER.tar.gz.

NOTE

The MFGTool only works in Windows operating system environment.

Perform the following steps to download the board images:

1. Unzip the Mfgtools-Rel-*_MX6SL_UPDATER.tar.gz file to a selected location. The directory is named MFGTool-Dir in this example.

2. If the directory is not already there, create the **android** directory under the MFGTool-Dir/Profiles/MX6SL Linux Update/OS Firmware/files path.
3. Copy following files in release_pakcage/image/evk_6sl to your MFGTool-Dir/Profiles/MX6SL Linux Update/OS Firmware/files/android/ directory
   - u-boot-mx6sl.bin
   - SD/boot.img
   - SD/system.img
   - SD/recovery.img

NOTE

Do not replace other files in files directory and OS Firmware directory

For SD images, use those images "SD" directory from the prebuilt images package.

4. Change the i.MX 6SoloLite-EVK board's S1(boot mode) to 10 (from 1-2 bit) to enter download mode.
5. Power on the board. Use USB cable on the i.MX 6SoloLite-EVK board OTG port, and connect your Windows PC with the i.MX 6SoloLite-EVK board.

NOTE

There are two USB micro ports in i.MX 6SoloLite-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.

6. Update the MFGTool-Dir/cfg.ini file according to the target device as shown in the following table.

Table 5. MFGTool-Dir/cfg.ini settings

Target device and boot storage	[platform] and [LIST] settings

i.MX 6SoloLite EVK SD	`[platform]`
	`board = SL`
	`[LIST]`
	`name = Android-EVK-SD`

7. Start the MFGTool by clicking MFGTool2.exe under MFGTool-Dir. The user interface of this tool should be set up as shown in the following figure.

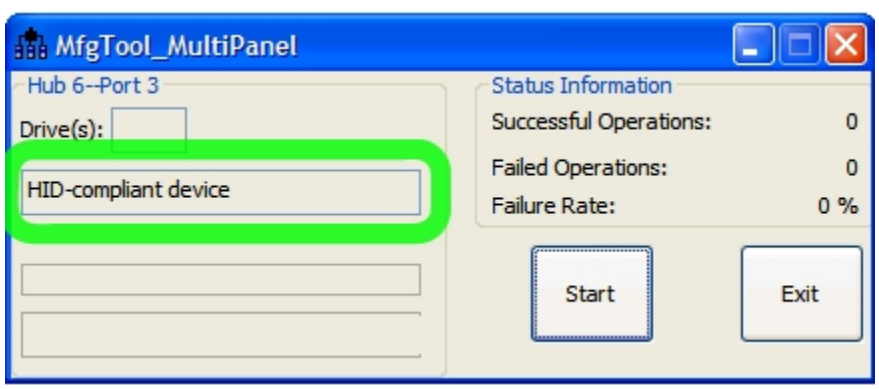

Figure 14. MFGTool user interface

8. Click Start to start downloading images.

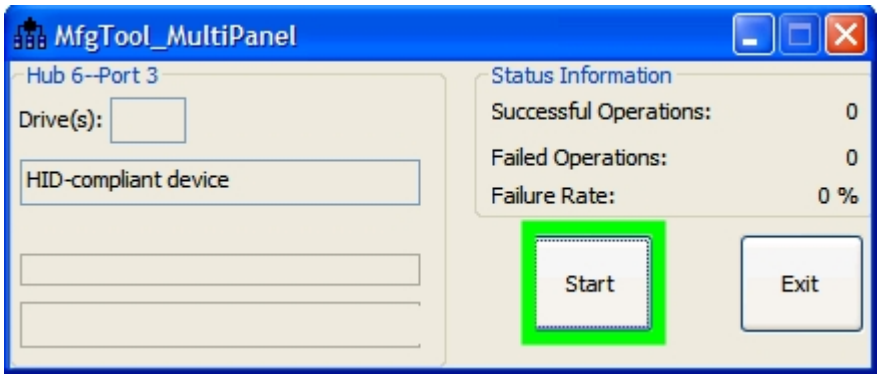

Figure 15. Starting download

The figure below shows the downloading in progress where the status bar shows the download status. The download may take one to two minutes depending on the host machine.

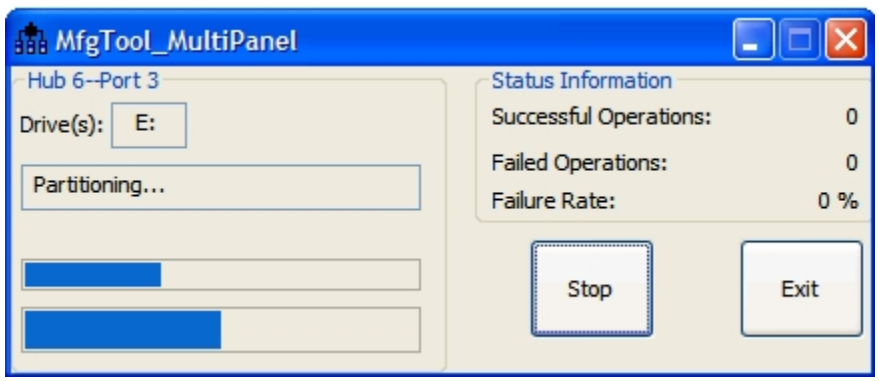

Figure 16. Download status

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

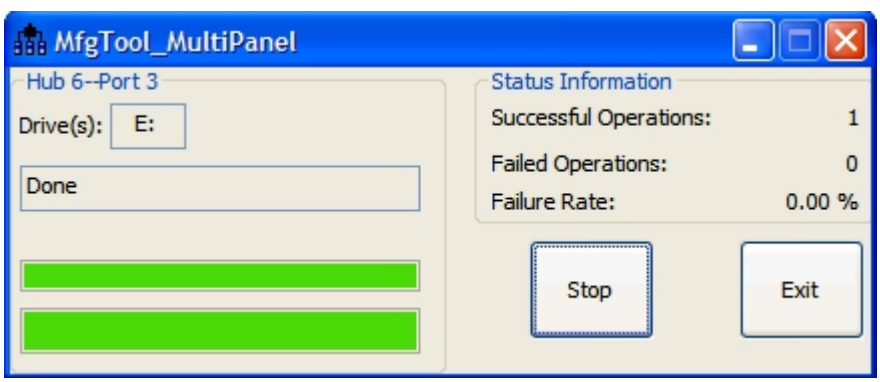

Figure 17. Download complete

9. Click Stop and disconnect the USB cable.
10. Change S1(boot mode) to 01 (from 1-2 bit). Change "Boot Switch(SW3,4,5)" to 01000000(from 1bit-8bit) 00101100(from 1bit-8bit) 00000000(from 1bit-8bit) to switch the board back to SD1 boot mode.

5.4 Booting with single display: LCD display

After downloading the images, you can boot the board by connecting it to the power supply.

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

```
UBoot > setenv bootcmd booti mmc1
UBoot > setenv bootargs console=ttymxc0,115200 init=/init
androidboot.console=ttymxc0 video=mxc_elcdif_fb:bpp=32
androidboot.hardware=freescale csi
UBoot > saveenv
```

5.5 Board reboot

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

Figure 18. Android KitKat image

How to Reach Us:

Home Page:
freescale.com

Web Support:
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