

# Android Quick Start Guide

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## 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/DualLite

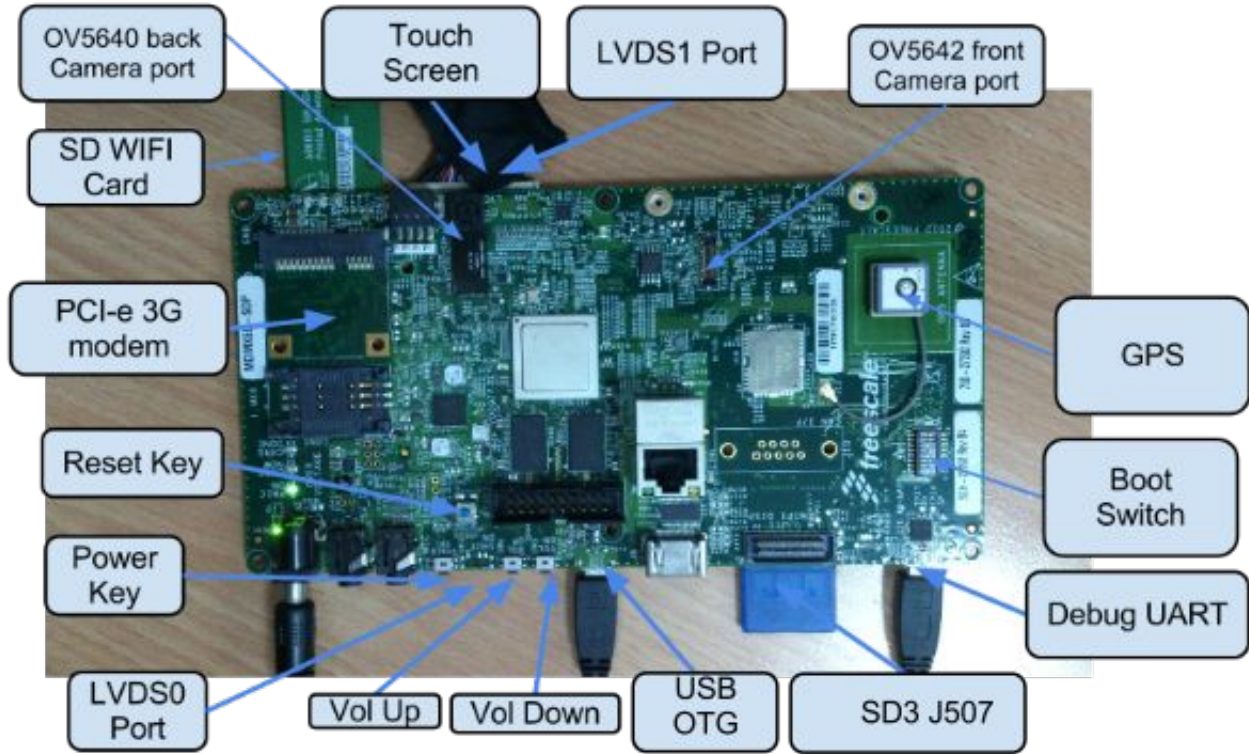
Supported boards:

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

### 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\_jb4.2.2\_1.0.0-ga\_image\_6qsabresd.tar.gz on board partitions.

**Table 1. Board Images**

Image Name	Path in Release Package	Download Target
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*Table continues on the next page...*

**Table 1. Board Images (continued)**

u-boot-6q.bin	\	eMMC first 8MB section
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\_jb4.2.2\_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\_jb4.2.2\_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
  - 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

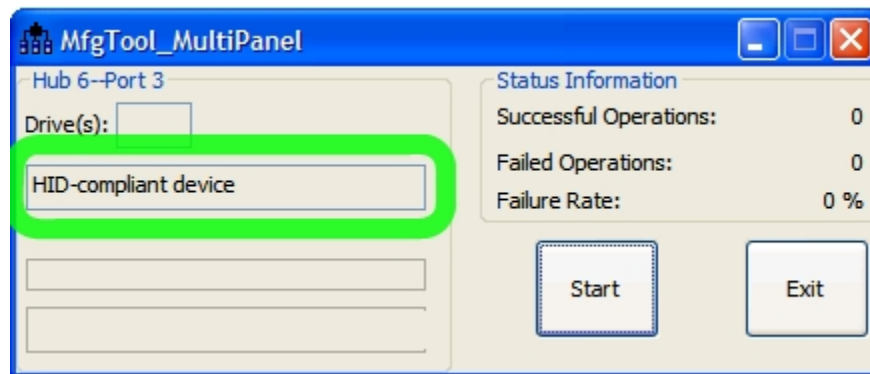
There are two USB micro ports on the SABRE-SD board: USB to UART and USB OTG. USB to UART is referred to as debug UART, and the USB OTG is referred to as USB in the hardware image above. The debug UART can be used to monitor the log of the hardware boot processing.

6. Update the MFGTool-Dir/cfg.ini file as follows:

## Working with SABRE-SD Board

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

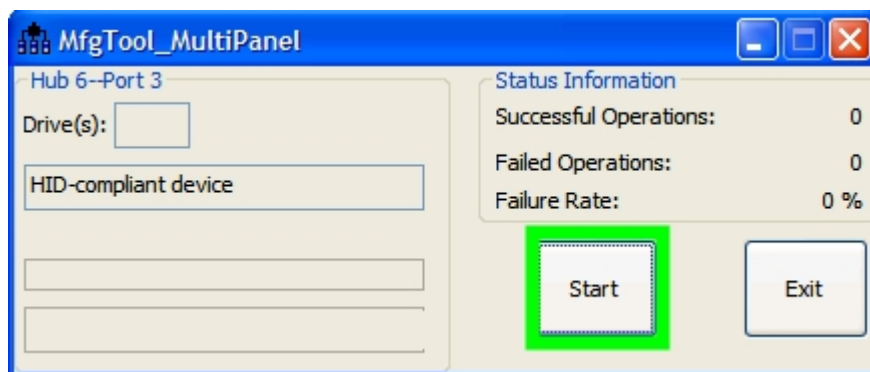
- Start the MFGTool by clicking the MFGTool2.exe<sup>1</sup> file under the MFGTool-Dir directory. The user interface of this tool should be set up as shown in the below figure.



**Figure 2. MFGTool User Interface**

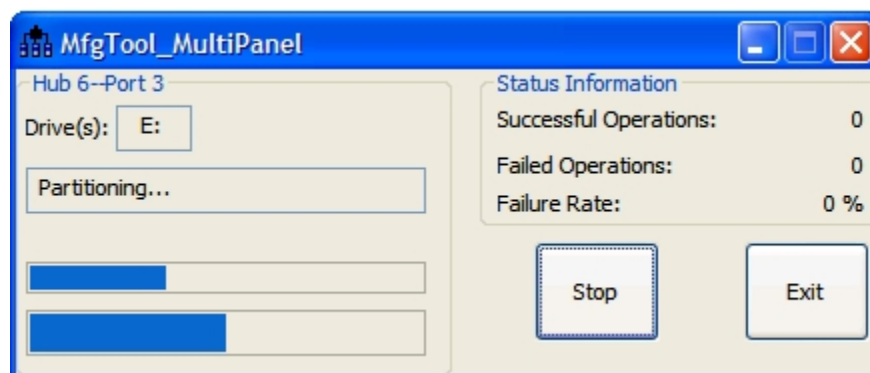
- Click Start to start downloading images.

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



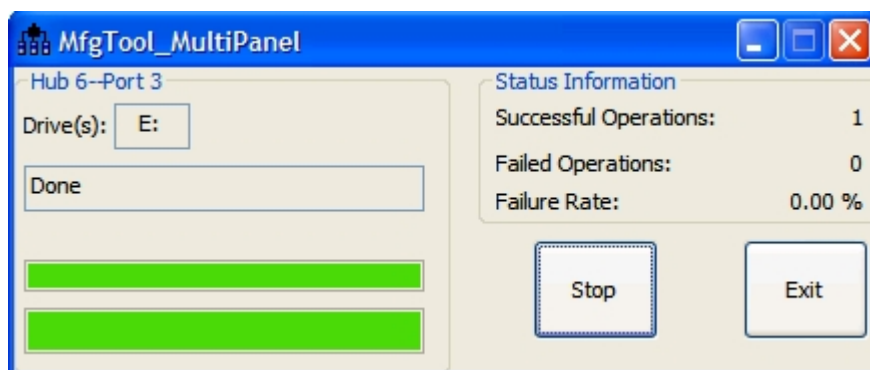
**Figure 3. Starting Download**

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 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 Image**

## **4 Working with SABRE-AI Board**

### **4.1 Board Hardware**

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

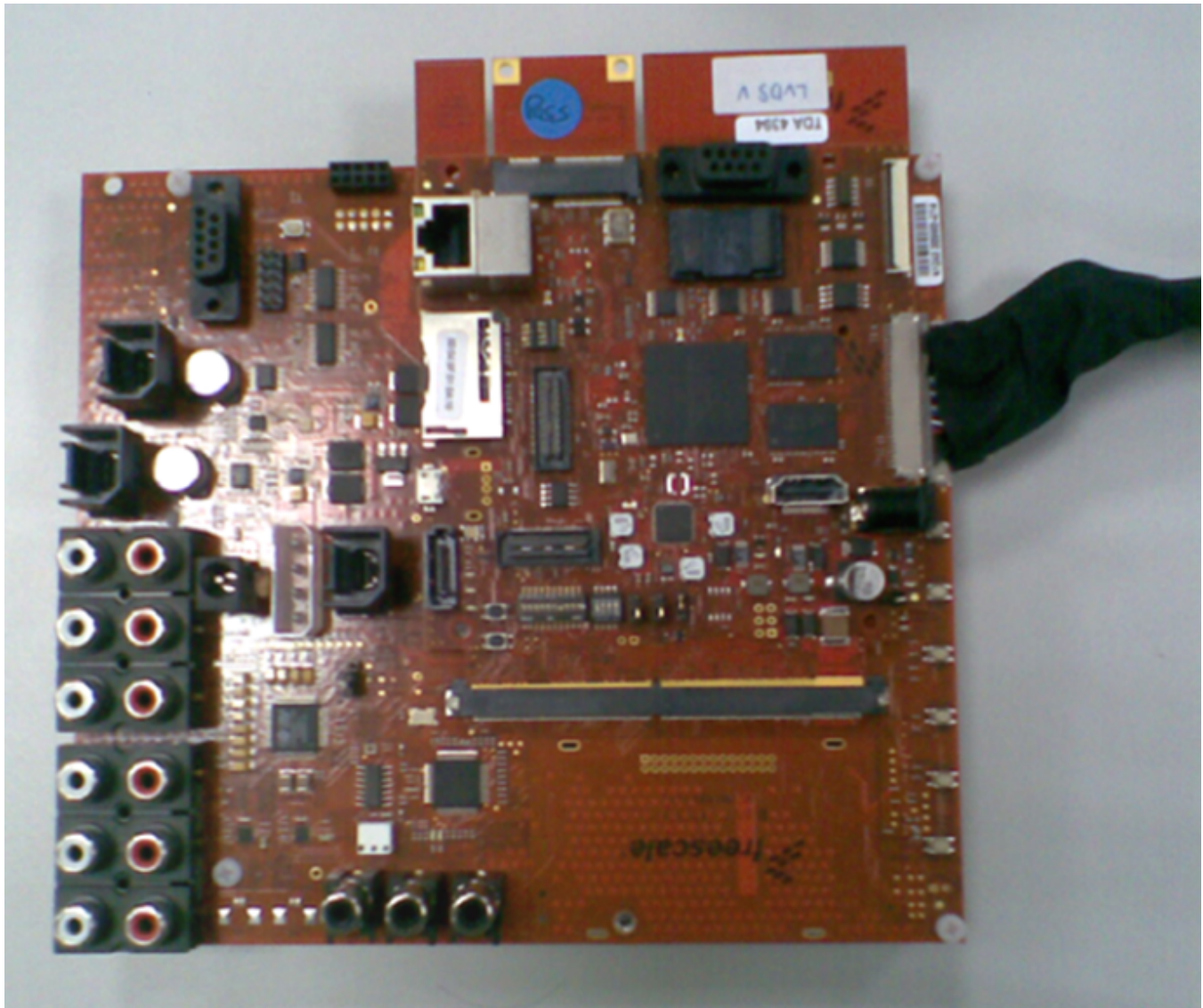


Figure 7. SABRE-AI Board

## 4.2 Board Images

The table below describes the location in the board partitions of the software images in android\_jb4.2.2\_1.0.0-ga\_image\_6qsabreauto.tar.gz, android\_jb4.2.2\_1.0.0-ga\_image\_6qsabresd.tar.gz on board partitions.

Table 2. Board Images

Image Name	Path in Release Package	Download Target
u-boot-mx6q.bin 193K	\	SD first 8MB block
u-boot-mx6dl.bin		The bootloader (with padding) for i.MX 6Dual/6Quad SABREAI SD boot
u-boot-mx6solo.bin		
boot.img 4.76M	\SD	SD 1st partition Boot Image for SD

Table continues on the next page...



**Table 2. Board Images (continued)**

recovery.img	5.16M	\SD	SD 2nd partition	Recovery Image
system.img	280M	SD	SD 5th partition	System Boot Image

## 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\_jb4.2.2\_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\_jb4.2.2\_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

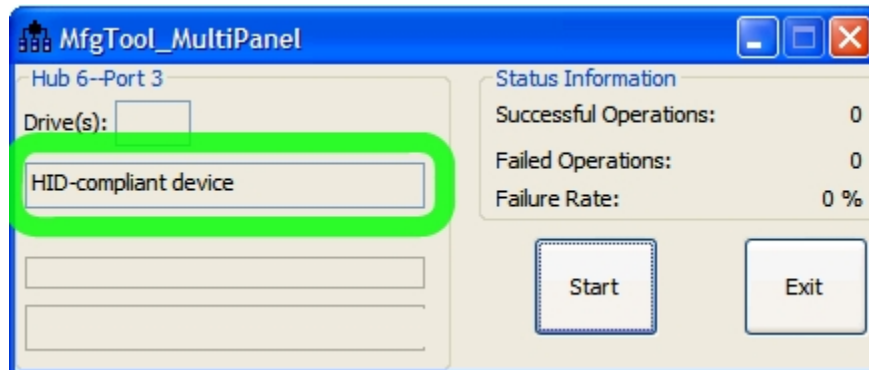
The USB micro port in SABRE-AI is J10.

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**

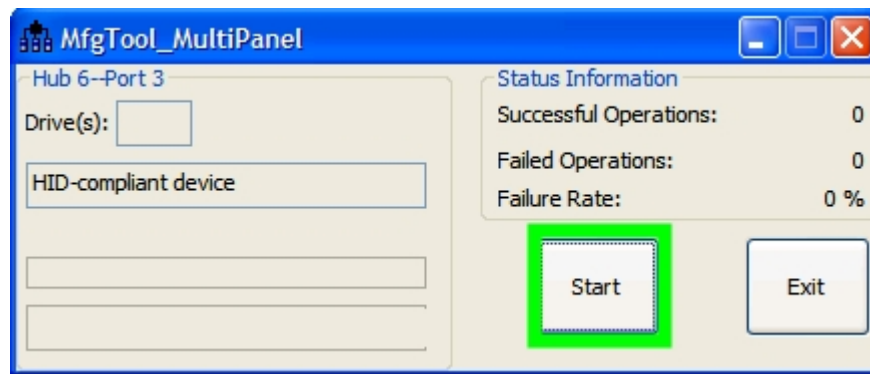
Target Device	[platform] and [LIST] Settings
i.MX 6Dual/6Quad SABRE-AI SD	<pre>[platform] board = SabreAuto  [LIST] name = Android-MX6Q-SabreAuto-SD</pre>
i.MX 6Dual/6Quad SABRE-AI NAND	<pre>[platform] board = SabreAuto  [LIST] name = Android-MX6Q-SabreAuto-NAND</pre>
i.MX 6Solo/6DualLite SABRE-AI SD	<pre>[platform] board = SabreAuto  [LIST] name = Android-MX6DL-SabreAuto-SD</pre>
i.MX 6Solo/6DualLite SABRE-AI NAND	<pre>[platform] board = SabreAuto  [LIST] name = Android-MX6DL-SabreAuto-NAND</pre>

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.



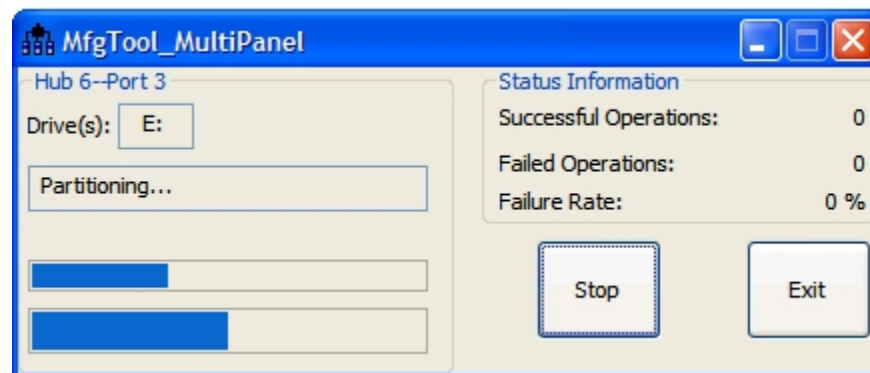
**Figure 8. MFGTool User Interface**

8. Click Start to start downloading images.



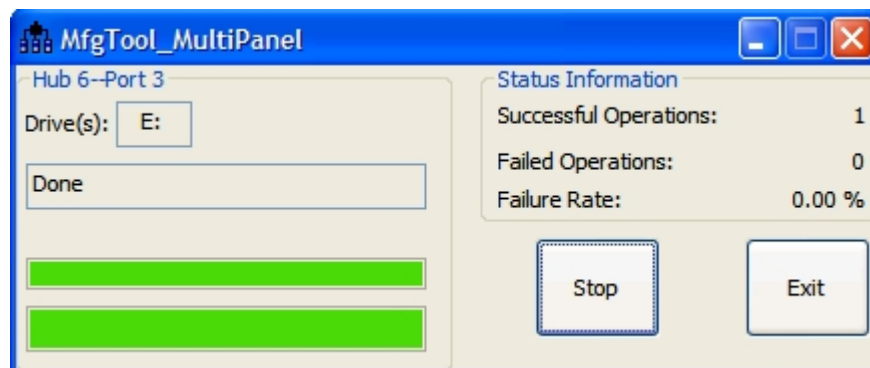
**Figure 9. Starting Download**

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 panels 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 vmlloc=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 0x500000;booti 0x12800000
U-Boot > setenv bootargs console=ttyMxc3,115200 androidboot.console=ttyMxc3 vmlloc=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(loader),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 vmlloc=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 0x500000;booti 0x12800000
U-Boot > setenv bootargs console=ttyMxc3,115200 androidboot.console=ttyMxc3 vmlloc=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(loader),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 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 0x500000;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 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 Image

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