



# i.MX 6UltraLite Evaluation Kit Quick Start Guide



## About the i.MX 6UltraLite Evaluation Kit

The i.MX 6 UltraLite evaluation kit (EVK) introduces developers to the i.MX 6UltraLite applications processor. To speed up development, the hardware design files, tools and board support packages (BSP) for the Linux operating system are available.

There are a number of accessory boards that work with the i.MX 6UltraLite EVK to provide additional capabilities such as resistive touch display; Europay, MasterCard, and Visa (EMV) WiFi® and Bluetooth connectivity. Refer to **[freescale.com/iMX6ULEVK](http://freescale.com/iMX6ULEVK)** for further information.

## Features

The following features are available with the i.MX 6UltraLite evaluation kit:

### CPU Board

- i.MX 6UltraLite applications processor 528 MHz ARM® Cortex®-A7 core
- Discrete power circuit
- 4Gb DDR3L SDRAM, 400 MHz
- 256 Mb Quad SPI Flash
- MicroSD connector
- Footprint for eMMC
- Footprint for NAND Flash
- 2.66 inch x 1.27 inch (6.76 cm x 4.24 cm), 4-layer board
- Left and Right Speaker Out connectors
- One USB 2.0 Micro-B OTG connector
- One USB 2.0 Standard-A host connector
- Two Ethernet (10/100T) connectors
- Dual CAN connector
- SD/SDIO connector
- Parallel camera connector
- Sensors: Freescale MAG3110 eCOMPASS, Freescale FXLS8471Q accelerometer and footprint for gyroscope

### Base Board

- LCD expansion port connector
- Audio codec
- 3.5 mm audio Stereo Headphone output
- Mono-Microphone Input on board
- 20-pin standard JTAG connector
- UART to Micro USB connector
- Arduino header
- 5.12 inch x 4.25 inch (13.0 cm x 10.8 cm), 4-layer board
- Bluetooth connector

Note: HDMI function validation ongoing. Contact Freescale.

## Get to Know the i.MX 6UltraLite EVK

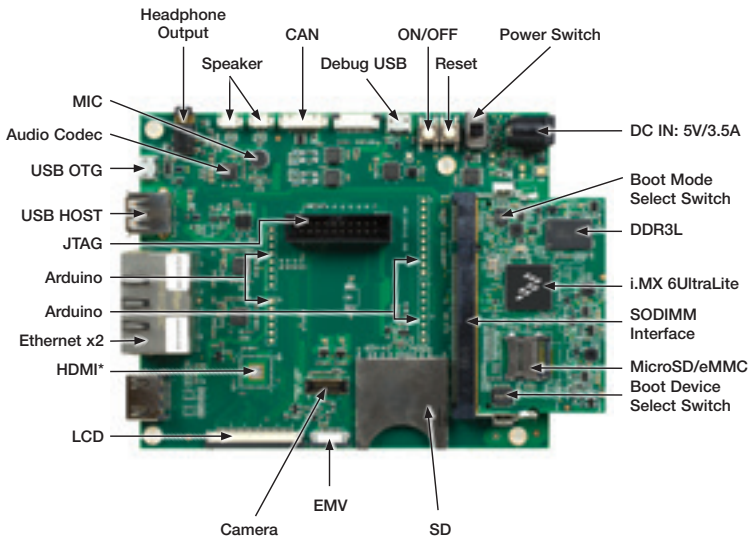


Figure 1: Front side main interfaces of i.MX 6UltraLite EVK

\*Note: HDMI function validation ongoing. Contact Freescale.

## Set Up the Boards

### 1. Unpack the Kit

The evaluation kit is shipped with the following items:

Item	Description
CPU Board	Main board with i.MX 6UltraLite applications processor, memory, discrete power circuitry and microSD card slot
Base Board	Peripherals and connectivity board

### 2. Prepare Accessories

The following items are required to run the i.MX 6UltraLite evaluation kit:

Item	Description
Power Supply	Output: 5V/3.5A, Plug: 2.1mmx5.5mm
USB Cable	USB cable (micro-B to standard-A)
MicroSD Card	Bootable Linux image (see the Download BSP Images section on how to load the image on a MicroSD card)
LCD Module (optional)	LCD8000-43T is the recommended module, which has a 4.3 inch resistive touch screen

Note: Power supply, USB cable, MicroSD card, LCD module are not included.

## Set Up the Boards (cont.)

### 3. Download Software and Tools

Download installation software and documentation under “**Jump Start Your Design**” at [freescale.com/iMX6ULEVK](http://freescale.com/iMX6ULEVK). The following documents are available on the website:

Item	Description
Documentation	<ul style="list-style-type: none"><li>• Schematics, layout and Gerber files</li><li>• Quick Start Guide</li></ul>
Software Development	Linux BSPs
Demo Images	Copy of the latest Linux BSP images that are available to program on to the MicroSD card

## Set Up the System

### 1. Insert SD Card

- Insert the MicroSD card into socket J301 on the CPU board (700-28617).

Note: Pay careful attention to the microSD connector as it is fragile. Slide the connector up or down, following the open and close arrows on the connector in order to place the microSD card inside and lock it in place. See the Getting Started Video at [freescale.com/iMX6ULEVK](http://freescale.com/iMX6ULEVK) for an example.

## 2. Connect USB Debug Cable (optional)

- Connect the micro-B end of the USB cable into debug port J1901 on the base board (700-28616). Connect the other end of the cable to a PC acting as a host terminal. One UART connection will appear on the PC for debugging. If needed, the Serial to USB drivers can be found at: [silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx](http://silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx)
- Open the terminal window (i.e. Hyper Terminal or TeraTerm) and apply the following configuration:
  - Baud Rate: 115200
  - Data Bits: 8
  - Stop Bit: 1
  - Parity: None
  - Flow Control: None

## 3. Connect LCD Module (optional)

- Connect the FPC cable of LCD module (LCD8000-43T) to the LCD connector J901 on the base board (700-28616) with the silver side of the cable facing down.

Note: The LCD Module is sold separately at [freescale.com/IMX6ULEVK](http://freescale.com/IMX6ULEVK).

## Set Up the System (cont.)

### 4. Connect Ethernet Cable (optional)

- Connect an Ethernet cable to the right port of the Ethernet Jack J1501 (close to the HDMI connector).

### 5. Connect Power Supply

- Connect the plug of the 5V power supply to the DC power jack J2001 on the base board (700-28616) and slide the power switch SW2001 to ON. When the power is connected to the i.MX 6UltraLite EVK, it will automatically begin the boot sequence.

## Boot Process for Linux Image

- During the boot process, there will be operating system status information scrolling on the terminal window of the PC (if connected). The Linux penguin images will initially appear in the upper left corner of the LCD screen.
- When the boot process is complete, the Linux operating system (Yocto Project) will be displayed on the LCD screen.

To work from the terminal window on the host PC, press enter at the terminal window to get the command prompt. Account name: root, password none.



## DIP Switch Configuration

The SW602 table shows the switch configuration of the boot mode for i.MX 6UltraLite EVK. Internal Boot is chosen as the default.

The SW601 table shows the switch configuration of the boot device for i.MX 6UltraLite EVK. MicroSD is chosen as the default.

i.MX 6UltraLite EVK DIP Switch Configuration (SW602)

D1/MODE1	D2/MODE0	Boot Mode
OFF	OFF	Boot From Fuses
OFF	ON	Serial Downloader
<b>ON</b>	<b>OFF</b>	<b>Internal Boot</b>
ON	ON	Reserved

i.MX 6UltraLite EVK DIP Switch Configuration (SW601)

D1	D2	D3	D4	Boot Device
<b>OFF</b>	<b>OFF</b>	<b>ON</b>	<b>OFF</b>	<b>MicroSD</b>
OFF	OFF	OFF	OFF	Quad SPI
OFF	ON	ON	OFF	eMMC
ON	ON	OFF	ON	NAND

Note: Bold indicates preferred configurations.

## Button Functions

The button operations table shows the functions of the push buttons and switches on the board.

Item	Description
SW2101	Evaluation board ON/OFF button <ul style="list-style-type: none"><li>• In Yocto Project, a short press of the button will generate an interrupt that is defined by the user.</li><li>• A prolonged press of the button (&gt;5 sec) will force an immediate hardware shutdown.</li><li>• If board is in the SHUTDOWN state, a short press of the button will restart (boot) the system.</li><li>• If the board is in the STANDBY state, a short press of the button will bring the system out of standby (resume operations, no boot).</li></ul>
SW2102	Evaluation board RESET button <ul style="list-style-type: none"><li>• A press of the button will reset the system and begin a boot sequence.</li></ul>
SW2001	Evaluation board power switch <ul style="list-style-type: none"><li>• Switching to the ON position connects the 5V power supply to the EVK main power system.</li><li>• Switching to the OFF position immediately removes all power from the board.</li></ul>

## Additional Reference

### Download BSP Images

The board images can be downloaded to the target board by using the manufacturing tool, named MFGTool, which runs on a computer with the Windows® operating system. The MFGTool zip file can be found at [freescale.com/IMX6ULEVK](http://freescale.com/IMX6ULEVK).

Perform the following steps to download the board images:

1. Unzip the MFGTool file to a selected location. The directory is named MFGTool-Dir in this example.
2. If the MFGTool is a version with rootfs, you can skip to step 4.
3. If the MFGTool is a version without rootfs, copy the following files from the demo images packages to the “MFGTool-Dir/Profiles/Linux/OS Firmware/files” path, make sure the file names are the same as the files listed below.
  - u-boot-imx6ulevk\_sd.imx
  - zImage-imx6ul-14x14-evk.dtb
  - zImage
  - rootfs\_nogpu.tar.bz2
4. Switch SW602 to OFF, ON (from 1-2 bit) to enter serial download mode as shown in Figure 2.

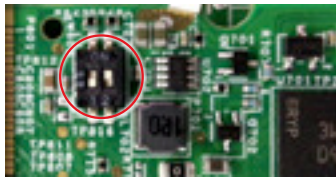


Figure 2: SW602 setting for Serial Download Mode

## Additional Reference (cont.)

5. Make sure the MicroSD card is inserted into socket J301 on the CPU board (700-28617).
6. Connect the micro-B end of the USB cable into OTG port (J1102) on the base board (700-28616). Connect the other end of the cable to a PC running Windows OS. The i.MX 6UltraLite will be enumerated as a HID device on PC.
7. Connect the plug of the 5V power supply to the DC power jack J2001 on the base board (700-28616). Then slide the power switch SW2001 to ON.
8. Double click the file \*.vbs according to the target device as shown:

Target Boot Device	VBS file
SD Card (USDHC-1)	mfgtool2-yocto-mx-evk-sdcard-sd1.vbs
<b>MicroSD Card (USDHC-2, default)</b>	<b>mfgtool2-yocto-mx-evk-sdcard-sd2.vbs</b>
Quad SPI NOR Flash	mfgtool2-yocto-mx-evk-spi-nor.vbs

Note: MicroSD Card is the default setting.

9. For example, we chose the MicroSD card (USDHC-2) as the boot device. Double click mfgtool2-yocto-mx-evk-sdcard-sd2.vbs, and then click Start to start downloading images.

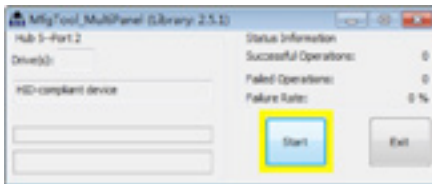


Figure 3. Starting download

The process bar becomes green once the download is complete.

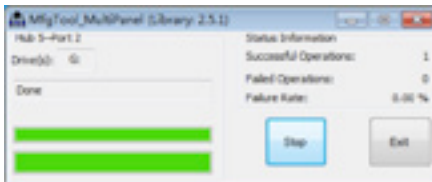


Figure 4. Download complete

10. Click Stop, then Exit.





## Get Started

Download installation software and documentation under at [freescale.com/IMX6ULEVK](https://www.freescale.com/IMX6ULEVK).

## Support

Visit the i.MX community at [imxcommunity.org](http://imxcommunity.org).

## Warranty

Visit [freescale.com/warranty](https://www.freescale.com/warranty) for complete warranty information.

**For more information, visit**  
[freescale.com/IMX6ULEVK](https://www.freescale.com/IMX6ULEVK)

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