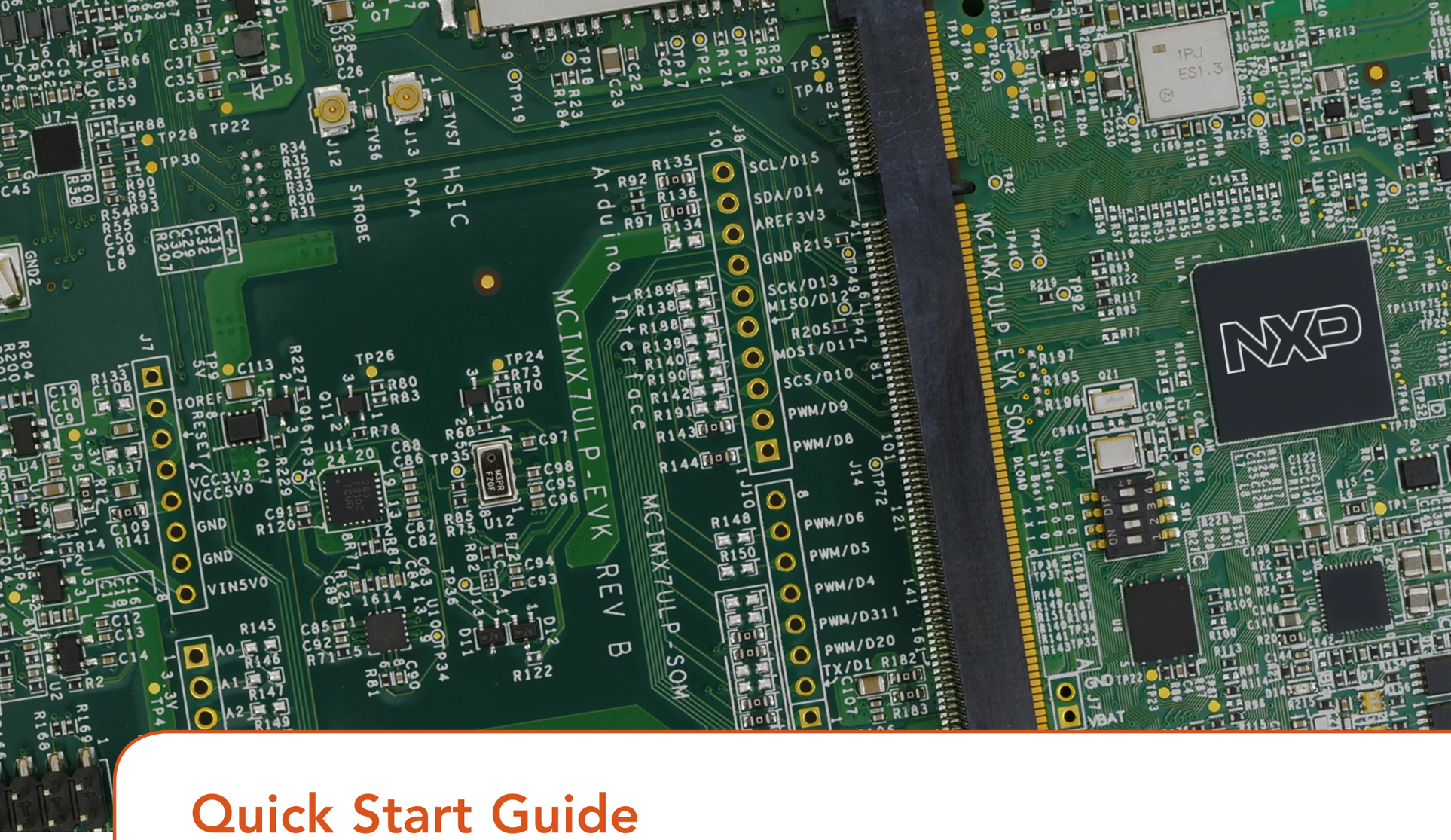


Quick Start Guide

i.MX 7ULP Evaluation Kit

Based on the i.MX 7ULP Applications Processor

GET TO KNOW THE EVALUATION KIT BASED ON THE i.MX 7ULP APPLICATIONS PROCESSOR

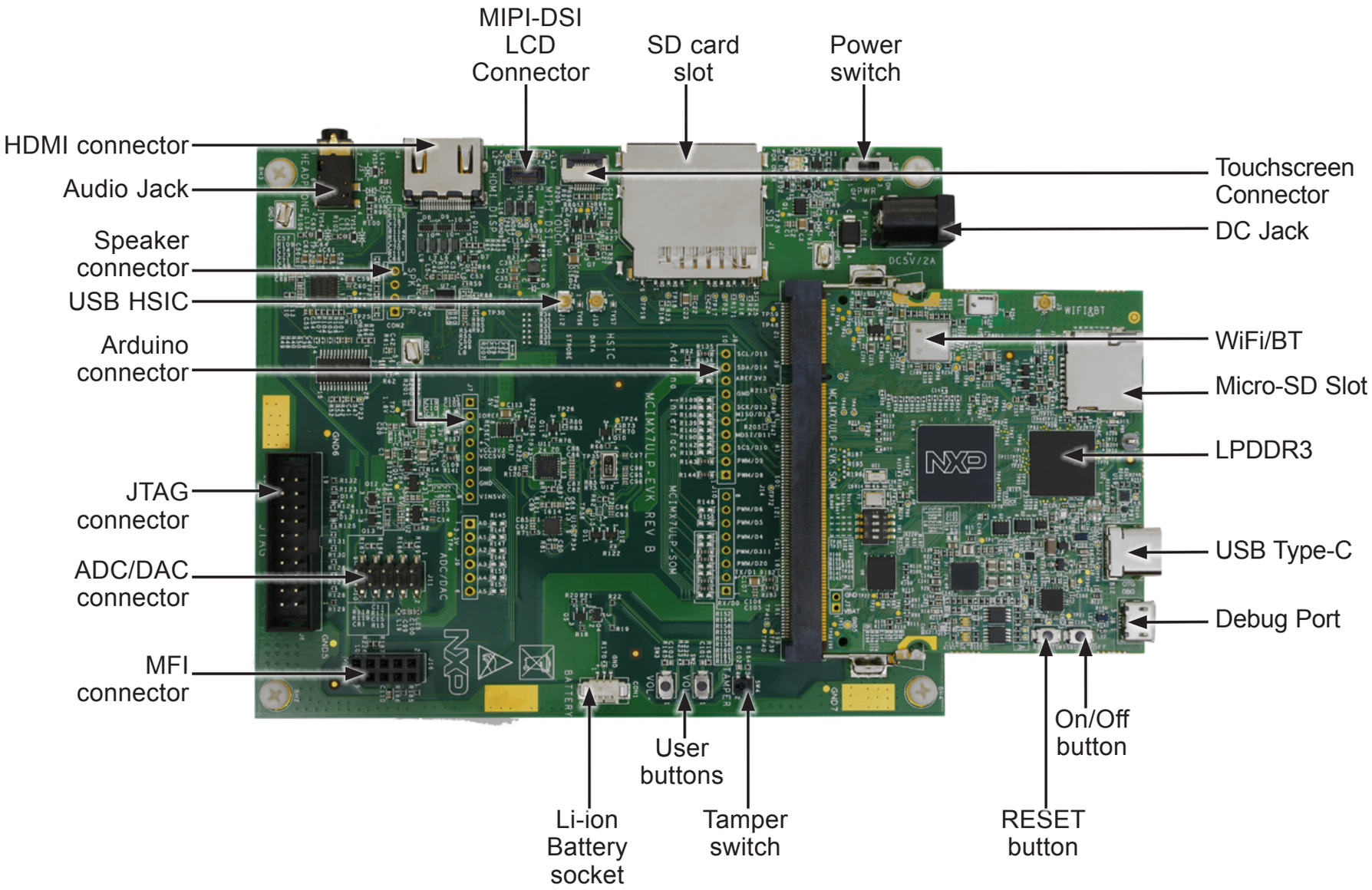


Figure 1: Main interfaces of i.MX 7ULP EVK

ABOUT THE EVALUATION KIT BASED ON i.MX 7ULP

The Evaluation Kit (EVK) based on the i.MX 7ULP introduces developers to the i.MX 7ULP applications processor. The EVK enables HDMI output for simple out-of-the-box bring up but allows reconfiguration for MIPI displays. The EVK is designed as a System-On-Module (SOM) board that connects to an associated baseboard. The SOM provides 1 GB LPDDR3, 8 MB Quad SPI flash, Micro SD 3.0 card socket, Wi-Fi/ Bluetooth capability, USB 2.0 OTG with Type C connector and an NXP PF1550 power management IC (PMIC). The baseboard provides additional capabilities including a full SD/MMC 3.0 card socket, audio codec, multiple sensors, an HDMI connector, and an alternate MIPI display connector. Additionally, the EVK facilitates software development with the ultimate goal of faster time to market through the support of both Linux® OS and Android™ rich operating systems, as well as FreeRTOS.

Hardware design files, tools and board support packages (BSPs) for Linux® and Android® are available at **www.nxp.com/iMX7ULPEVK**.

FEATURES

The following features are available with the EVK based on the i.MX 7ULP applications processor:

- i.MX 7ULP applications processor with ARM® Cortex®-A7 core and ARM® Cortex®-M4 core
- 1 GB LPDDR3 SDRAM
- 8 MB QSPI NOR Flash
- eMMC (unpopulated)
- MicroSD® connector
- Wi-Fi/BT
- USB Type-C connector
- SD connector
- MIPI-DSI LCD connector
- 3.5 mm audio stereo headphone jack
- USB HSIC I-PEX connector
- Tamper detect switch
- HDMI Output connector
- Speaker connectors
- Li-ion battery socket
- Sensors including:
  - Accelerometer / Magnetometer
  - Pressure Sensor
  - Gyroscope
- JTAG 20-pin 2.54 mm connector
- Debug port for ARM Cortex-A7/M4 core via USB micro-B connector
- Arduino connector

HOW TO GET STARTED

This section describes how to use the evaluation kit and the required accessories to develop applications using the evaluation kit.

1 Unpacking the Kit

The evaluation kit is shipped with the items listed in Table 1. Ensure the items are available in the i.MX 7ULP Evaluation Kit.

ITEM	DESCRIPTION
SOM board	SOM board with i.MX 7ULP applications processor, LPDDR3, PMIC, WIFI/BT, QSPI and MicroSD card slot
Base Board	Peripherals and connectivity board
Documentation	Quick Start Guide
Power Supply	Output: 5 V/4 A, Plug: 2.1 mm x 5.5 mm
USB Cable	USB cable (micro-B to standard-A)
Micro-SD card	Bootable Linux image

Table 1: Contents of the i.MX 7ULP Evaluation Kit

2 Download Software and Tools

Download installation software and documentation under **"Jump Start Your Design"** at **www.nxp.com/iMX7ULPEVK**.

ITEM	DESCRIPTION
Documentation	• Schematics, layout and Gerber files • Quick Start Guide
Software development tools	• Linux and Android BSPs • FreeRTOS SDK
Demo images	Copy of the latest Linux and Android BSP images that are available to program on to the MicroSD card

Table 2: Download Software and Tools Contents

SETTING UP THE SYSTEM

1 Insert MicroSD Card

Insert the MicroSD card into socket J1 on the SOM board (700-29163).

2 Connect USB Debug Cable

Connect the micro-B end of the supplied USB cable into debug port J6 on the SOM board (700-29163). Connect the other end of the cable to a PC acting as a host terminal. If needed, the serial to USB drivers can be found at **www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers**

Once the PC recognizes the virtual USB to UART device, it can be seen in your PC Device Manager list.

There will be two ports automatically configured: one is for the Cortex-A7 core console/debug serial port, and the other one is for the Cortex-M4 debug.

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 Power Supply

IConnect the plug of the 5 V power supply to the DC power jack P1 on base board (700-29164) and slide power switch SW1 to ON. When power is

connected to the EVK, it will automatically begin the boot sequence.

BOOT PROCESS FOR LINUX IMAGE

Boot Process

- Change SW1 on the SOM board (700-29163) to ON, OFF, OFF, ON (from bits 4-1) to boot from the MicroSD card, as shown in Figure 2. After the board images are programmed and the boot switches are correctly configured, the system is ready to run.
- Power on the EVK board.
- During the boot process, there will be operating system status information scrolling on the terminal window of the PC (if connected).
- When the boot process is complete, the Linux operating system (Yocto Project) will be displayed via HDMI connector.
- 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. For details on running FreeRTOS™ on ARM Cortex-M4 core, please visit **www.nxp.com/iMXtools**.

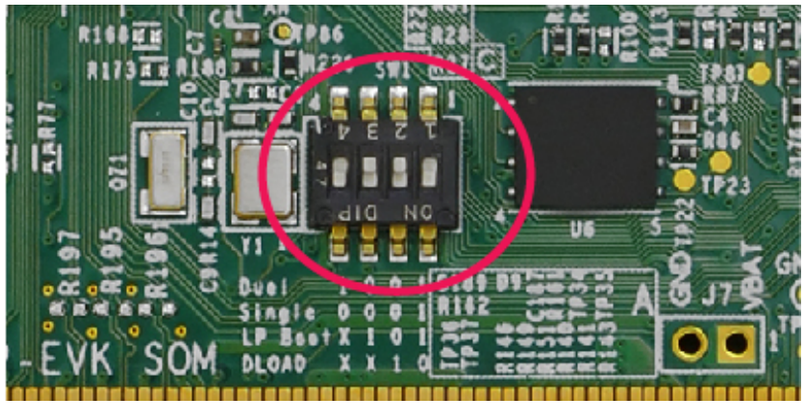


Figure 2. SW1 setting for internal boot mode

DIP SWITCH CONFIGURATION

Table 3 shows the switch configuration of boot mode for i.MX 7ULP EVK. Dual boot is chosen as default.

D4	D3	D2	D1	BOOT MODE
ON	**OFF**	**OFF**	**ON**	**Dual boot**
OFF	OFF	OFF	ON	Single boot
X	ON	OFF	ON	Low power boot
X	X	ON	OFF	Download

Table 3: i.MX 7ULP EVK DIP switch configuration (SW1 on SOM)

BUTTON FUNCTIONS

Table 4 shows the functions of the push buttons and switches on the board.

ITEM	DESCRIPTION
SW2 ON SOM	Evaluation kit ON/OFF button • In Yocto Project, short press and long press will only generate an interrupt, the usage is defined by the application software. • Prolonged depress (>5 sec) will force an immediate hardware shutdown. • If board is in the SHUTDOWN state, short press of the button will restart (boot) the system. • If board is in the STANDBY state, short press of the button will bring the system out of standby (resume operations, no boot).
SW3 ON SOM	Evaluation kit RESET button • Button press will reset the system and begin a boot sequence.
SW2 ON BB	Evaluation kit switch • VOL+
SW3 ON BB	Evaluation kit switch • VOL-

Table 4: i.MX 7ULP EVK board button operations

The following information is provided per Article 10.8 of the Radio Equipment Directive 2014/53/EU:
(a) Frequency bands in which the equipment operates.
(b) The maximum RF power transmitted.

PN	RF Technology	(a) Freq Ranges (EU)	(b) Max Transmitted Power
MCIMX7ULP-EVK	WLAN 2.4GHz Mode 802.11b/g/n	2412 MHz – 2472 MHz	16.92 dBm
	WLAN 5GHz Mode 802.11a/n/ac	5180 MHz – 5825 MHz	
	WLAN 5.8GHz Mode	5725 MHz – 5850 MHz	
	BT/ BLE	2402 MHz – 2480 MHz	7.79 dBm

EUROPEAN DECLARATION OF CONFORMITY
(Simplified DoC per Article 10.9 of the Radio Equipment Directive 2014/53/EU)

This apparatus, namely MCIMX7ULP-EVK, conforms to the Radio Equipment Directive 2014/53/EU.
The full EU Declaration of Conformity for this apparatus can be found at this location:
www.nxp.com/iMX7ULP

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body

SUPPORT

Visit **www.nxp.com/support** for a list of phone numbers within your region.

WARRANTY

Visit **www.nxp.com/warranty** for complete warranty information.



Get Started

Download installation software and documentation under **"Jump Start Your Design"** at **www.nxp.com/iMX7ULPEVK**.

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Document Number: IMX7ULPWSG REV 0
Agile Number: 926-29162 REV A