Quick Start Guide
IMX95LPD5EVK-19CM

# i.MX 95 Family of Applications Processors Evaluation Kit Quick Start Guide

## About the i.MX 95 EVK

This quick start guide for the i.MX 95 Evaluation Kit (EVK) explains how to set up and begin developing with the i.MX 95 applications processor and associated accessories. The i.MX 95 applications processor is ideal for machine learning, vision, advanced multimedia, industrial and IoT applications. With it's integrated eIQ® Neutron Neural Processing Unit (NPU), the i.MX 95 processor adds intelligence to designs for devices in smart homes, smart cities, smart factories and automotive displays.

## Specifications

**Compute card**

- i.MX 95 applications processor with:
  - 6x Arm® Cortex®-A55
  - 1× Arm Cortex-M33
  - 1× Arm Cortex-M7
  - eIQ® Neutron NPU
- LPDDR5 32-bit 16GB
- eMMC 5.1, 64GB
- Power management ICs (PF09, PF5301, PF5302)
- Power measurement ADC

**Base board**

- MicroSD 3.0 card slot
- Octal SPI Nor flash 1Gb
- One USB 2.0 A connector
- One USB 2.0/3.0 C connector
- One USB 2.0 C for Debug
- M.2 Key-E for Wi-Fi/BT
- Two MIPI-CSI connector
- Two CAN port
- Eight channels for ADC
- $I^2C$ Expansion connector
- One 10Gbps Ethernet (TSN)
- One 1Gbps Ethernet (TSN)
- One ENET B2B connector
- Multiple display interface:
  - 1x MIPI-DSI connector (muxed on MIPI-CSI connector)
  - 2x 4 data lane LVDS connector
- Audio codec support
- PDM MIC array support
- One PCIe x8 slot for audio
- One PCIe x4 slot

## Get to know the iMX95LPD5EVK-19CM

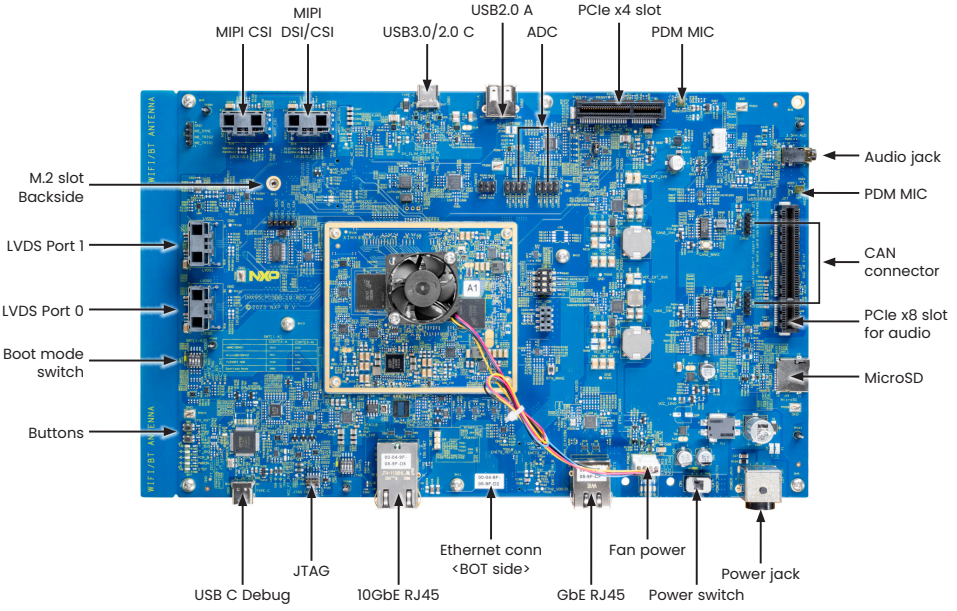



Figure 1: Top view IMX95LPD5EVK-19CM board

## Get to know the iMX95LPD5EVK-19CM continued

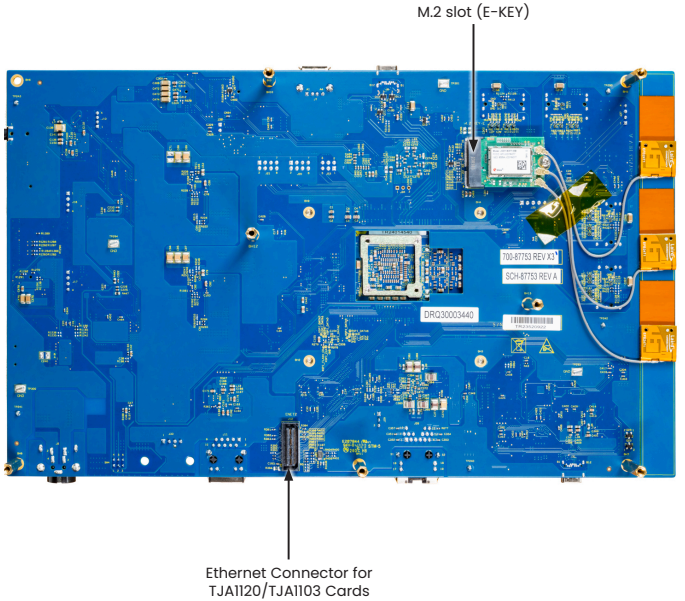



Figure 2: Back view IMX95LPD5EVK-19CM board

## Getting started

### 1. Unpack the kit

The IMX95LPD5EVK-19CM is shipped with the items listed in Table 1.

**Table 1: Kit contents**

| Item | Description |
|---|---|
| iMX95LPD5EVK-19CM | i.MX 95 19X19 EVK board (SOM+BB) |
| Power supply | AC/DC adapter, 12v / 13.33A, 160W |
| USB type-c cable | 2x USB cable, USB 3.0 A/M to type c cable, 1M |
| M.2 module | PN: M2-JODY-W3777; Wi-Fi 6 / BT 5.3 |
| Software | Linux BSP image programmed in eMMC |
| Documentation | Quick Start Guide |

## Getting started continued

### 2. Prepare accessories

The following items in Table 2 are recommended to run the IMX95LPD5EVK-19CM.

**Table 2: Customer-supplied accessories**

| Item | Description |
|---|---|
| IMX-AUD-IO | iMX 8 Series legacy general auto audio card with PCIe x8 connector |
| IMX-MIPI-HDMI | MIPI-DSI to HDMI adapter board |
| MX9-DSI-OLED | MIPI to OLED convert board and OLED panel (6.39", 1080 x 2340) |
| IMX95-OS08A20 | MIPI-CSI camera (OS08A20) wo/ ISP, 8MP 3840 x 2160, 4K30fps |
| MX95MBCAM10001 | Cameras serializer modules (OX03C10 2MP sensor+ Maxim Serializer) |
| MX95MBDESER01 | Maxim Quad De-serializer Board convert board, support up to 4x MX95MBCAM10001 modules |
| MX95MBDES10001 | Camera serializer module (OX03C10 2MP sensor+ Maxim Serializer) and deserializer converted board |
| IMX-DSI-SDSB | MIPI-DSI to GMSL (serializer) + GMSL to LVDS (deserializer) board, support up to 2x MIPI-DSI through MINI-SAS connector |
| RPi-CAM-MiniSAS | AR0144 with external ISP, AP1302 Camera module + Convert Board |
| IMX-LVDS-HDMI | LVDS to HDMI adapter board |

## Getting started continued

### 3. Download software and tools

Installation software and documentation are available at **www.nxp.com/imx95**. The following are available on the website:

**Table 3: Software and tools**

| Item | Description |
|---|---|
| Documentation | • Schematics, layout and Gerber files<br>• Quick Start Guide<br>• Hardware Design Guide<br>• i.MX 95 EVK Board User Manual |
| Software development | • Android BSPs<br>• Linux BSPs |
| Demo Images | Copy of the latest Linux and Android images that are available to program on to the eMMC.<br>i.MX 95 EVK software can be found at **nxp.com/imxsw**. |

## Setting up the system

The following will describe how to run the pre-loaded Linux image on the IMX95LPD5EVK-19CM (i.MX 95).

### 1 Confirm boot switches

The boot switches should be set to boot from "**eMMC**", **SW7** [1-4] (Figure 3: i.MX 95 EVK connection points) are used for boot, See table below:

| BOOT device | SW7 [1-4] |
|---|---|
| eMMC/uSDHC1 | 1010 |

Note: 1 = ON  0 = OFF

### 2 Connect USB debug cable

Connect the UART cable into the port **J31** (Figure 3). Connect the other end of the cable to a PC acting as a host terminal. UART connections will appear on the PC, this will be used as A55 and M33 core system debugging.

Open the terminal window (i.e., Hyper Terminal or Tera Term), choose the right COM port number and apply the following configuration.

- Baud rate: **115200bps**
- Data bits: **8**
- Parity: **None**
- Stop bits: **1**

### 3 Connect to an HDMI display

Connect an IMX-MIPI-HDMI board with **J14** MINI-SAS connector through cable and then connect other side to a HDMI display through an HDMI cable.

### 4 Connect mouse

Connect the mouse to the USB A port connector **J7** through USB C OTG cable.

## Step-by-step instructions continued

### 5 Connect power supply

Connect the AC/DC power adapter to **J5**, then power up the board by **SW4** switch.

### 6 Board boot up

As the board boots up, you will see penguins appear in the upper left-hand corner of the monitor, and then you will see the Linux terminal Icon on the top left and timer on right top corner. Congratulations, the i.MX 95 EVK is ready to use!

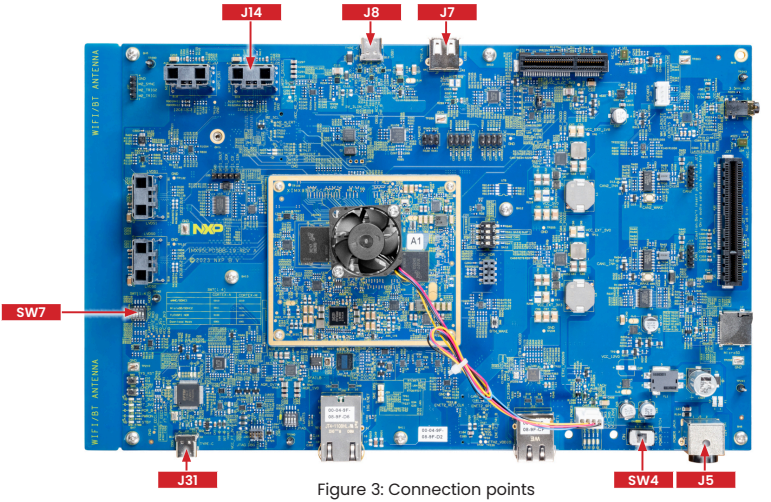



Figure 3: Connection points

## Additional information

### Boot switches

SW7[1-4] is the boot configuration switch, the default boot device is eMMC/uSDHC1, as shown in Table 4. If you want to try other boot devices, you need to change the boot switches to corresponding values as listed in Table 4.

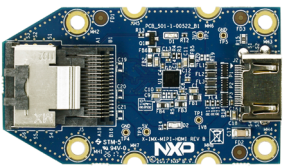
**Table 4: Boot device settings**

| Boot mode | SW7-1 | SW7-2 | SW7-3 | SW7-4 |
|---|---|---|---|---|
| Serial downloader | 1 | 0 | 0 | 1 |
| USDHC1 8-bit eMMC 5.1 | 1 | 0 | 1 | 0 |
| USDHC2 4-bit SD3.0 | 1 | 0 | 1 | 1 |
| FlexSPI serial NOR | 1 | 1 | 0 | 0 |
| FlexSPI serial NAND | 1 | 1 | 0 | 1 |

Note: 1 = ON  0 = OFF

## Additional information continued

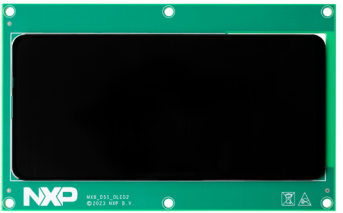
### Do more with accessory boards

| IMX-LVDS-HDMI | IMX-MIPI-HDMI |
|---|---|
| LVDS to HDMI adaptor card (mini SAS) | MIPI DSI output to HDMI adapter board |
|  |  |

## **Additional information** continued

**MX9-DSI-OLED**

MIPI to OLED convert board+Panel (USMP_A064_1080x2340)



**MX95MBCAM10001**

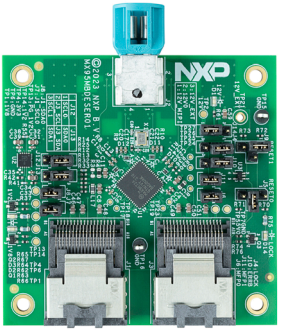
OX03C10 2MP sensor+ Maxim Serializer

**IMX95-OS08A20**

4K-MIPI-CMOS-CAMERA-MODULE


**MX95MBDES10001**

Maxim Quad De-serializer Board convert board, support up to 4x MX95MBCAM10001 modules



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 A 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 determinedby 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.

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 |
|---|---|---|---|
| IMX95LPD5EVK-19CM | WLAN 2.4GHz Mode 802.11b/g/n | 2412MHz – 2472MHz | 19dBm |
| | WLAN 5GHz Mode 802.11a/n/ac | 5180MHz – 5825MHz | 16dBm |
| | BLE | 2402MHz – 2480MHz | 8dBm |
| | BT BR/EDR | 2402MHz – 2480MHz | 10dBm |

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

This apparatus, namely IMX95LPD5EVK-19CM, 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/imx95**

## 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.

## www.nxp.com/IMX95EVK



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