UG10311

Getting Started with IMX95OV-CONVERT Board on i.MX 95 19 mm x 19 mm EVK

Rev. 1.1 — 5 March 2026 **User guide**

Document information

Information	Content
Keywords	UG10311, IMX95OV-CONVERT, i.MX 95, i.MX 95 19 mm × 19 mm EVK, MIPI-CSI
Abstract	This document explains how to connect the OS08A20 image sensor using the IMX95OV-CONVERT board on the i.MX 95 19 mm × 19 mm EVK.

1 Introduction

This document explains how to connect the OS08A20 image sensor using the IMX95OV-CONVERT board on the i.MX 95 19 mm × 19 mm EVK. It also describes the steps for building the NXP Linux kernel, related files, and enabling the Image Signal Processor (ISP) and camera module on the i.MX 95 19 mm x 19 mm EVK board.

2 Hardware overview

This section describes the i.MX 95 19 mm x19 mm EVK board, IMX95OV-CONVERT board (OS08A20 sensor) module, and their hardware connections.

2.1 i.MX 95 19 mm x 19 mm EVK

Figure 1 shows the top-view of the i.MX 95 19 mm x 19 mm EVK board.

The J13 (Mini-SAS connector) on the EVK is used for camera input when paired with the IMX95OV-CONVERT board.

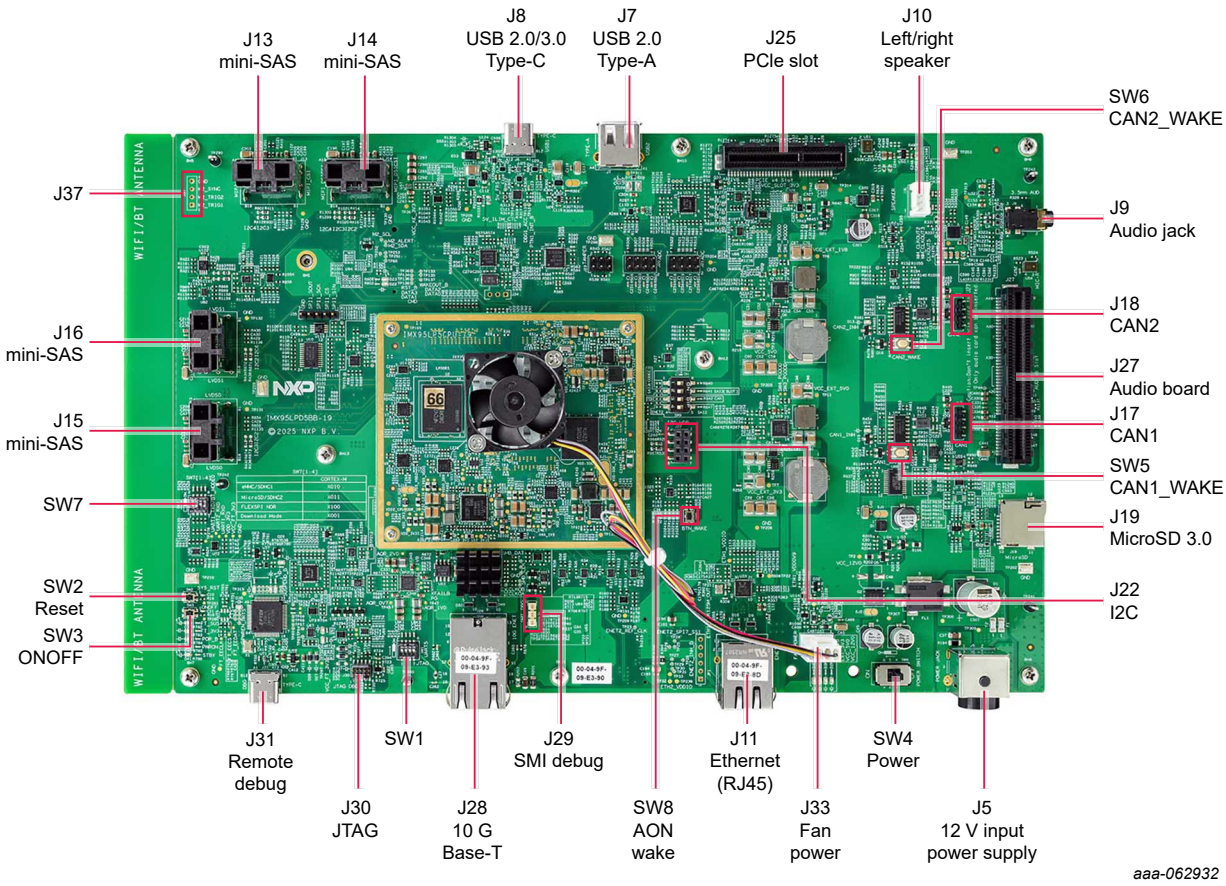

Figure 1. i.MX 95 19 mm x 19 mm EVK board top view

Note: *For more information about the i.MX 95 19 mm x 19 mm EVK board, refer to the board user manual (Section 6).*

2.2 OS08A20 sensor module

The OS08A20 sensor supports image sizes of 4K, 2K, 1080p, and 720p. The output format is 12-bit/10-bit RAW RGB. The sensor has 2-exposure staggered HDR and supports the frame start input.

Figure 2 shows the OS08A20 sensor module.

Figure 2. OS08A20 sensor module

The i.MX 95 ISP has a demosaicing sensor (also known as color reconstruction sensor) for raw data processing and generating the YUV output format. The ISP also has the denoise, sharpen, and gamma modules to improve the sensor image quality.

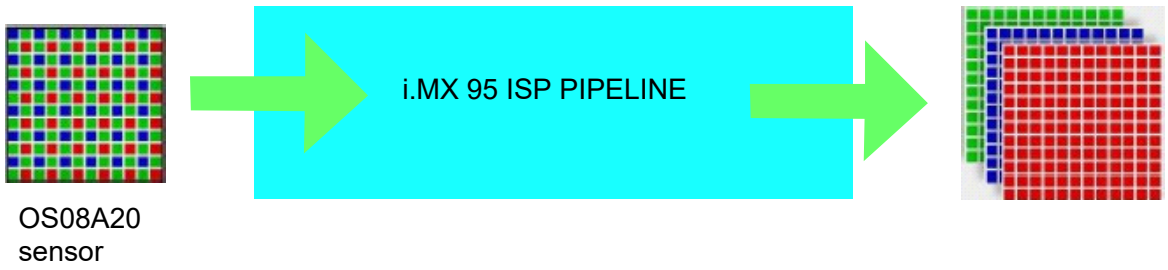

Figure 3. OS08A20 sensor module

Following are the features of the OS08A20 sensor:

- 3840 x 2160 12-bit linear mode
- Pixel size: 2 µm x 2 µm
- Three ISP output formats:
  - YUV422
  - NV16
  - NV12
- Lens specifications:
  - Field of View (FOV): D 60° H 53° V 31°
  - F-number (F.NO): 2.6 ± 5%
  - Composition: 9 glass elements + infrared filter (9G + IR)

Note: *For more information about the IMX-OS08A20 sensor module, refer to the IMX-OS08A20 webpage.*

2.3 Hardware connections

The sensor is connected to the IMX95OV-CONVERT switch board. The switch board uses the Mini-SAS cable to connect to the J13 connectors on the i.MX 95 19 mm x 19 mm EVK board.

Figure 4 shows the hardware connections of the boards. Following are the steps to build up the connections.

1. Power off the i.MX 95 19 mm x19 mm EVK and IMX95OV-CONVERT switch board.
2. Plug a Mini-SAS cable into the J13 connector on the i.MX 95 19 mm x19 mm EVK.
3. Plug the other end of the Mini-SAS cable into the P1 connector on the IMX95OV-CONVERT card.
   Note: *Make sure that the Mini-SAS connector is inserted in the correct orientation and locked in place using the latch mechanism.*
4. Connect an HDMI monitor to J15 through an LVDS-to-HDMI convert card (IMX-LVDS-HDMI)
5. Power on the i.MX 95 19 mm x19 mm EVK and IMX95OV-CONVERT switch board.

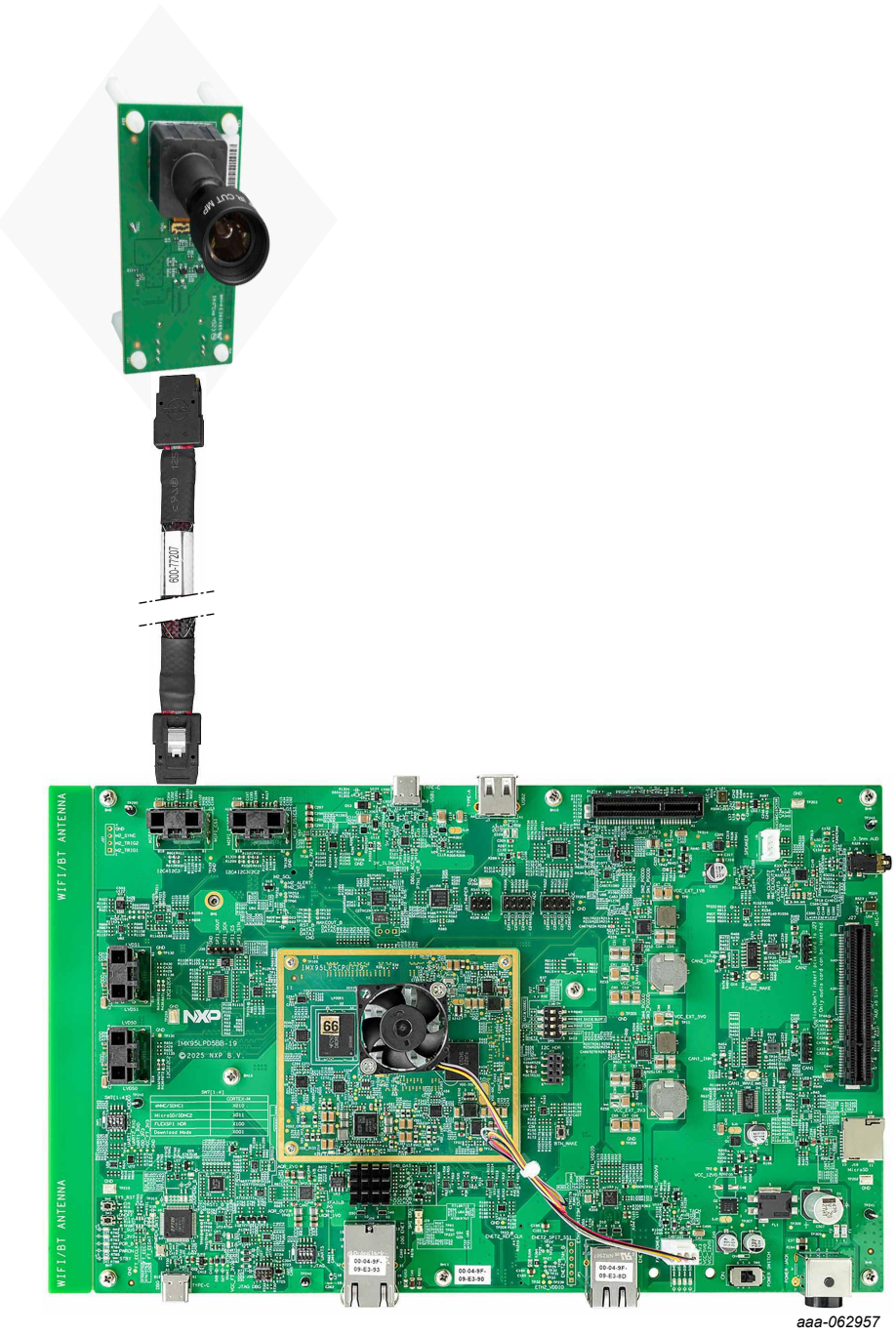

Figure 4. Hardware connections

3 Software overview and configuration

Software requirements:

- BSP: 2025Q1 LF6.12.3-1.0.0 or newer
- Host PC with FT4232 driver

Note: *You can download FT4232 driver from here.*

3.1 Software configuration

This section describes how to configure the software for the sensor module. Integrating a new sensor into the i.MX 95 camera software stack consists of the following essential tasks:

- Writing a Linux kernel V4L2/media controller driver for the sensor.
- Add device tree node for sensor and integration within the board and SoC architecture.
- Implement a CamHelper class for the new sensor.
- Provide a calibration file that the neo IPA consumes to manage IPA algorithms.

3.2 OS08A20 HAL source code

OS08A20 Hardware Abstraction Layer (HAL) source code is as follows:

```
├── os08a20
│   ├── driver
│   │   ├── ox05b1s_mipi.c (OS08A20 uses the same driver with OX05B1S)
│   ├── cam_helper
│   │   ├── camera_helper_os08a20.cpp
│   ├── calibration parameters
│   │   ├── os08a20.yaml
```

4 Building and testing

This section describes building and testing the demo using the hardware setup described earlier.

Note: *The OS08A20 camera sensor is enabled in the BSP release. The document is for 2025Q1 LF6.12.3-1.0.0 release.*

1. Set the correct U-Boot configuration:

```
setenv fdtfile imx95-19x19-evk-os08a20-isp-it6263-lvds0.dtb
saveenv
boot
```

2. Set ISP control to libcamera

```
export LIBCAMERA_PIPELINES_MATCH_LIST='nxp/neo,imx8-isi,uvc'
```

3. Stop Weston

```
systemctl stop Weston
```

4. Check camera information

```
cam -l
```

5. Test the camera with cam application

```
cam --camera 1--stream width=3840, height=2160, pixelformat=YUYV --capture=0
 --display=HDMI-A-1
```

Now, you can preview the image captured by the camera on the HDMI monitor.

5 Acronyms

Table 1. Acronyms

Acronym	Description
BSP	Board Support Package
CSI	Camera Serial Interface
DTS	Device Tree Source
EVK	Evaluation Kit
HAL	Hardware Abstraction Layer
HDR	High Dynamic Range
IPA	Image Processing Algorithms
ISP	Image Signal Processor

6 Related documentation

Table 2 lists and explains the additional documents and resources that you can refer to for more information on the i.MX 95 processor and i.MX 95 19 mm x 19 mm EVK. Some of the documents listed below may be available only under a Non-Disclosure Agreement (NDA). To request access to these documents, contact your local field applications engineer (FAE) or sales representative.

Table 2. Related documentation

Document	Description	Link / How to access
i.MX 95 Applications Processor Reference Manual	Intended for system software and hardware developers and application programmers who want to develop products with i.MX 95 MPU	i.MX 95 webpage
i.MX 95 Applications Processor Data Sheet	Provides information about electrical characteristics, hardware design considerations, and ordering information	i.MX 95 webpage
IMX95LPD5EVK-19 Board User Manual	Provides a board overview including board features, different jumpers, connectors, DIP switches, and buttons on the board, along with functional description of various interfaces available on the board.	UM12022
i.MX 95 Hardware Design Guide	This document aims to help hardware engineers design and to test their i.MX 95 processor-based designs. It provides information about board layout recommendations and design checklists to ensure first-pass success and avoidance of board bring-up problems.	UG10210

7 Note about the source code in the document

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8 Revision history

Table 3 summarizes the revisions to this document.

Table 3. Revision history

Document ID	Release date	Description
UG10311 v.1.1	5 March 2026	Minor editorial updates
UG10311 v.1.0	9 February 2026	Initial public release

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