RN00265

Release Notes for i.MX FRDM Yocto Software

Rev. 4.0 — 30 June 2025

Document information

Information	Content
Keywords	RN00265, FRDM-IMX93, FRDM-IMX91, FRDM-IMX8MPLUS, FRDM-IMX91S
Abstract	This document contains important information about the package contents, supported features, known issues and limitations in this release.

1 Overview

This document contains important information about the package contents, supported features, known issues and limitations in this release.

This release is based on the i.MX Linux Release LF6.6.36_2.1.0. For more information on the i.MX software release, see i.MX LINUX.

This release also supports Matter based on i.MX Matter 2024 Q3 (LF6.6.36_2.1.0). For more information on the i.MX Matter release, see i.MX Matter.

This document refers to *i.MX Linux Release Notes* (document RN00210 v.LF6.6.36_2.1.0) and includes special information for FRDM platforms.

i.MX reference boards

- FRDM-IMX93 board
- FRDM-IMX91 board
- FRDM-IMX91S board
- FRDM-IMX8MPLUS board

1.1 References

This release includes the following references and additional information.

- *i.MX FRDM Software User Guide* (document UG10195): The document provides the information on how to build, install, and run images for i.MX FRDM platforms.
- *i.MX Linux Release Notes* (document RN00210 v.LF6.6.36_2.1.0): The document provides the i.MX Linux release information.

The quick start guides contain basic information on the board and setting it up. They are on the NXP website.

- *FRDM i.MX 93 development board Quick Start Guide* (document FRDM-IMX93-QSG)
- *FRDM i.MX 91 development board Quick Start Guide* (document FRDM-IMX91-QSG)

The FRDM board information is available below:

- The FRDM-IMX91 board information is at FRDM-IMX91.
- The FRDM-IMX93 board information is at FRDM-IMX93.

1.2 Release contents

This release consists of the following:

- Prebuilt images
- Documentation
- Git repo open source distributions on the GitHub

The i.MX FRDM Software Releases are named `imx-frdm-<x.y>`.

`<x.y>`: Semantic versioning specification, where X is the major version, and Y is the minor version.

Table 1 lists the contents included in each package.

Table 1. Release contents

Component	Description
Linux operating system Kernel and device trees	6.6.36

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Table 1. Release contents...*continued*

Component	Description
U-Boot	v2024.04
SD card images	Prebuilt images used for testing to use on target i.MX FRDM boards
FlexSPI NAND flash images	Prebuilt images for the FlexSPI NAND flash if the target board supports to boot from the NAND flash
i.MX FRDM layer repos	To build images for target i.MX FRDM boards

The release packages contain the following.

- Documentation.
- Prebuilt binaries:
  - SD card prebuilt image for the release target SoC
  - Kernel and device trees
  - Boot images
  - FlexSPI NAND flash prebuilt image if the target board supports to boot from NAND flash
  - `uuu` script for programming FlexSPI NAND flash if the target board supports to boot from the NAND flash
  - Applicable Arm Cortex-M Demos if applicable to target SoC

See the *i.MX FRDM Software User Guide* (document UG10195) for the information on how to use these release contents.

i.MX FRDM software also releases Yocto recipes for building images through repos on Github.

1.3 License

The Board Support Package (BSP) is composed of a set of packages and metadata (for Yocto Project Recipes) and each one has its own licensing. Verify the license of the target package before developing. The license can be found at the top of a recipe or a source file (such as `*.c` or `*.h`). For details, contact your NXP representative.

During the Yocto Project setup, to set up an i.MX build, accept the NXP license. This acceptance is recorded in the build configuration files so that the following proprietary binaries can be extracted during the build process. The NXP proprietary packages contain a Software Content Register (SCR) file that lists information about the package: `imx-gpu-viv`, `imx-codec`, and `imx-parser`.

1.4 Limited access to proprietary packages

For the limited access packages, see Section 1.4 "Limited access proprietary packages" in the *i.MX Linux Release Notes* (document RN00210).

1.5 Instructions to get the AP1302 firmware

To get the AP1302 firmware from OnSemi GitHub, perform the following steps:

1. Download ap1302_60fps_ar0144_27M_2Lane_awb_tuning.bin from OnSemi GitHub NXP_i.MX93_ap1302_firmware by following README.md.
2. Rename it as `ap1302.fw`.
3. Create a folder *imx/camera/* under */lib/firmware*, and copy `ap1302.fw` to the target board under */lib/firmware/imx/camera*.

1.6 UART output

Using the default CDC-ACM driver of the Linux computer, the UART of FRDM-IMX8MPLUS/FRDM-IMX93/ FRDM-IMX91/FRDM-IMX91S can experience abnormal input/output when the UART cable is replugged.

To resolve this issue, follow the instructions below:

1. Git Clone https://github.com/WCHSoftGroup/ch343ser_linux.git.
2. Compile the CH343 Linux driver, remove the CDC-ACM driver, and then install the CH343 Linux driver.
3. To use Minicom, ensure that you have upgraded it to version 2.9.
4. Connect to Minicom/PuTTY by using */dev/CH343USB0*.

The Windows driver can be downloaded from: https://www.wch.cn/downloads/CH343SER_EXE.html.

2 What's new?

This section describes the changes in this release, including new features and defect fixes.

2.1 New features

A summary of the main new features is as follows. New features are based on the i.MX Linux Release LF6.6.36_2.1.0:

- FRDM Board support:
  - Supports the FRDM-IMX91 board.
  - Supports the FRDM-IMX93 board.
  - Supports the FRDM-IMX8MPLUS board.
  - Supports the FRDM-IMX91S board.
- Wi-Fi/Bluetooth support:
  - Integrates NXP SDIO IW610 support.
- Matter support:
  - Supports FRDM-IMX93/FRDM-IMX91/FRDM-IMX8MPLUS/FRDM-IMX91S based on i.MX Matter 2024 Q3.
  - Integrates NXP SDIO IW610 support.

3 U-Boot and device trees

This section describes the different U-Boots and device trees.

3.1 U-Boot configurations

As shown in Table 2, the U-Boot configurations are listed for each machine configuration. The machine configurations are provided through the Yocto Project layers in the `meta-imx-frdm` layer in the `meta-imx-bsp/conf/machine` subdirectory.

Table 2. U-Boot configurations

U-Boot configuration for Boot device	Description	Supported machine configuration

`sd`	`sd` supports boot from an SD card. This is the default U-Boot configuration.
	For boards supporting eMMC, SD boot can be flashed in eMMC for boot from eMMC instead of an SD card.
		`imx93-11x11-lpddr4x-frdm`
		`imx91-11x11-lpddr4-frdm`
		`imx8mp-lpddr4-frdm`
		`imx91-11x11-lpddr4-frdm-imx91s`
		`imx93frdm`

Table 2. U-Boot configurations...*continued*

U-Boot configuration for Boot device	Description	Supported machine configuration

		`imx91frdm`
		`imx8mpfrdm`
		`imx91frdmimx91s`

`emmc`	Supports boot from eMMC.	`imx93-11x11-lpddr4x-frdm`
		`imx91-11x11-lpddr4-frdm`
		`imx8mp-lpddr4-frdm`
		`imx91-11x11-lpddr4-frdm-imx91s`
		`imx93frdm`
		`imx91frdm`
		`imx8mpfrdm`

`nand`	Supports boot from FlexSPI NAND flash.	`imx91frdmimx91s`

`ecc`	Supports DDR ECC.	`imx93-11x11-lpddr4x-frdm`
		`imx91-11x11-lpddr4-frdm`
		`imx91-11x11-lpddr4-frdm-imx91s`
		`imx93frdm`
		`imx91frdm`
		`imx91frdmimx91s`

3.2 Kernel device trees

Table 3 describes the kernel and device trees included in this release. A list of several device tree files is provided for each board to offer examples on how to handle different pin conflicts due to pin muxing.

Table 3. Kernel and device tree configurations

Kernel and device tree configuration	Description
Kernel Binary Image	i.MX 8 and i.MX 9 Image kernel is built with `imx_v8_defconfig` in `arch/arm64/configs`.
DTB Descriptions	Each reference board has a standard device tree as follows: • `imx91-11x11-frdm.dtb` • `imx93-11x11-frdm.dtb` • `imx8mp-frdm.dtb` • `imx91-11x11-frdm-imx91s.dtb`
Audio	Enables various audio device trees. • `imx91-11x11-frdm-aud-hat.dtb` • `imx91-11x11-frdm-8mic.dtb` • `imx93-11x11-frdm-aud-hat.dtb` • `imx93-11x11-frdm-8mic.dtb` • `imx8mp-frdm-8mic.dtb` • `imx91-11x11-frdm-imx91s-aud-hat.dtb` • `imx91-11x11-frdm-imx91s-8mic.dtb`
Bluetooth wireless technology Wi-Fi	Enables the Bluetooth wireless technology and Wi-Fi hardware. The standard device tree supports Wi-Fi and Bluetooth: • `imx91-11x11-frdm.dtb` • `imx93-11x11-frdm.dtb` • `imx8mp-frdm.dtb` • `imx91-11x11-frdm-imx91s.dtb`

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Table 3. Kernel and device tree configurations...*continued*

Kernel and device tree configuration	Description
Video Capture	• `imx93-11x11-frdm.dtb`: Supports AP1302. • `imx91-11x11-frdm-mt9m114.dtb, imx93-11x11-frdm-mt9m114.dtb, imx91-11x11-frdm-imx91s-mt9m114.dtb`: Support parallel MT9M114 camera. • `imx8mp-frdm.dtb`: Supports AP1302. • `imx8mp-frdm-dual-ap1302.dtb`: Supports dual-AP1302. • `imx8mp-frdm-os08a20.dtb`: Initial support for one ISP camera - OS08A20. • `imx8mp-frdm-dual-os08a20.dtb`: Initial support for dual ISP cameras - OS08A20.
Video Display	• `imx91-11x11-frdm-tianma-wvga-panel.dtb, imx93-11x11-frdm-tianma-wvga-panel.dtb, imx91-11x11-frdm-imx91s-tianma-wvga-panel.dtb`: Support Tianma TM050RDH03 5.0" WVGA TFT LCD panel. • `imx93-11x11-frdm.dtb`: Supports LVDS-HDMI display with on-board converter. • `imx93-11x11-frdm-dsi.dtb`: MIPI DSI 7-inch Waveshare LCD panel. • `imx8mp-frdm.dtb`: Supports the HDMI display. • `imx8mp-frdm-boe-wxga-lvds0-panel.dtb, imx8mp-frdm-boe-wxga-lvds1-panel.dtb`: Support the BOE WXGA LVDS panel. • `imx8mp-frdm-waveshare.dtb`: MIPI DSI 7-inch Waveshare LCD panel.
LP UART	Enables LPUART. • `imx91-11x11-frdm-lpuart.dtb` • `imx93-11x11-frdm-lpuart.dtb` • `imx91-11x11-frdm-imx91s-lpuart.dtb`
LD	Supports the system to be switched to Low Drive (LD) mode. • `imx91-11x11-frdm-ld.dtb` • `imx93-11x11-frdm-ld.dtb` • `imx91-11x11-frdm-imx91s-ld.dtb`

4 Known issues and limitations

Read through all hardware-related reference material and ensure that the necessary hardware modifications are made before using the software.

Table 4. Known issues and workarounds for the FRDM-IMX8MPLUS board

SoC	Module	Source	Description	Workaround
i.MX 8M Plus	Audio	Hardware	The left and right channels are reversed.	This issue only occurs on a few early FRDM-IMX8MPLUS boards. A software workaround is to swap the left and right channels using the following command on the Linux OS: ``` amixer -c wm8962audio cset name="DAC L/R Swap Switch" on amixer -c wm8962audio cset name="ADC L/R Swap Switch" on ```

5 Revision history

Table 5 summarizes the revisions to this document.

Table 5. Revision history

Document ID	Release date	Description
RN00265 v4.0	30 June 2025	Added description for FRDM-IMX91S
RN00265 v3.0	23 May 2025	Added description for FRDM-IMX8MPLUS
RN00265 v2.0	25 February 2025	Added description for FRDM-IMX91
RN00265 v1.0	17 February 2025	Initial public release

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