

RN00516

i.MX 9 2-Wheeler Digital Connected Cluster (DCC) Release Note

Rev. 1.0 — 4 September 2026

Release notes

Document information

Information	Content
Keywords	RN00516, DCC, 2-wheeler, i.MX 95
Abstract	This document contains important information about release content, supported features, known issues, and limitations in this release.



1 Overview

i.MX 9 series applications processors bring together higher performance applications cores, an independent MCU-like real-time domain, Energy Flex architecture, state-of-the-art security with EdgeLock secure enclave, and dedicated multi-sensory data processing engines (graphics, image, display, audio, and voice). One typical application of i.MX 9 series application processors is Digital Connected Cluster (DCC) for 2-Wheeler. This release provides basic functions required for i.MX 9 DCC based on Linux 6.18.20-2.0.0 release.

This document contains important information about release content, supported features, known issues, and limitations in this release, support for the following three boards, IMX95LPD5EVK-19, FRDM-IMX95, and IMX952LPD5EVK-19 with A0 silicon.

1.1 About i.MX 9 DCC

i.MX 9 DCC is based on i.MX 9 application processor, which contains complicated vision use cases, connectivity user cases.

[Table 1](#) lists the hardware devices.

Table 1. i.MX 9 DCC hardware devices

Required hardware	Quantity	Description
IMX95LPD5EVK-19 or FRDM-IMX95	1	i.MX95-19×19-lpddr5-evk or i.MX95-15×15-lpddr4x-frdm
HDMI Panel	1	Waveshare HDMI panel 1920 × 720 (12.3") or 1920 × 1080 Monitor
IMX-MIPI-HDMI	1	Required if MIPI interface is used for HDMI panel connection.
IMX-LVDS-HDMI	1	Required if LVDS interface is used for HDMI panel connection.
AW693	1	This module is used for i.MX 95 EVK 19 mm × 19 mm board. Required for use cases: Music, phone call, and helmet to helmet.
IW612	1	This module is used for i.MX 95 FRDM or i.MX 952 EVK 19 × 19 mm board. Required for use cases: Phone projection, music, phone call, and helmet to helmet
RD-KW47-LOCALIZATION	2	W47 LOC board, required for Key distance use case.
MX95MBDES10001	1	The kit includes: 1pcs MX95MBCAM10001 + 1pcs Maxim Quad De-serializer Board convert board.
MX95MBCAM10001	2	CAMERA MODULE OX03C10, 1920 × 1280 serializer MAX96717F.
JBL BT Headset	2	Used as helmets.
IMU	1	Optional for running the IMU control 3D model.
FRDM-EXPI-SAS	1	FRDM-EXPI-SAS provides an FPC-to-MiniSAS interface for the FRDM i.MX 95 board.

1.1.1 System block diagram

[Figure 1](#) shows a simplified block diagram about i.MX 9 DCC.

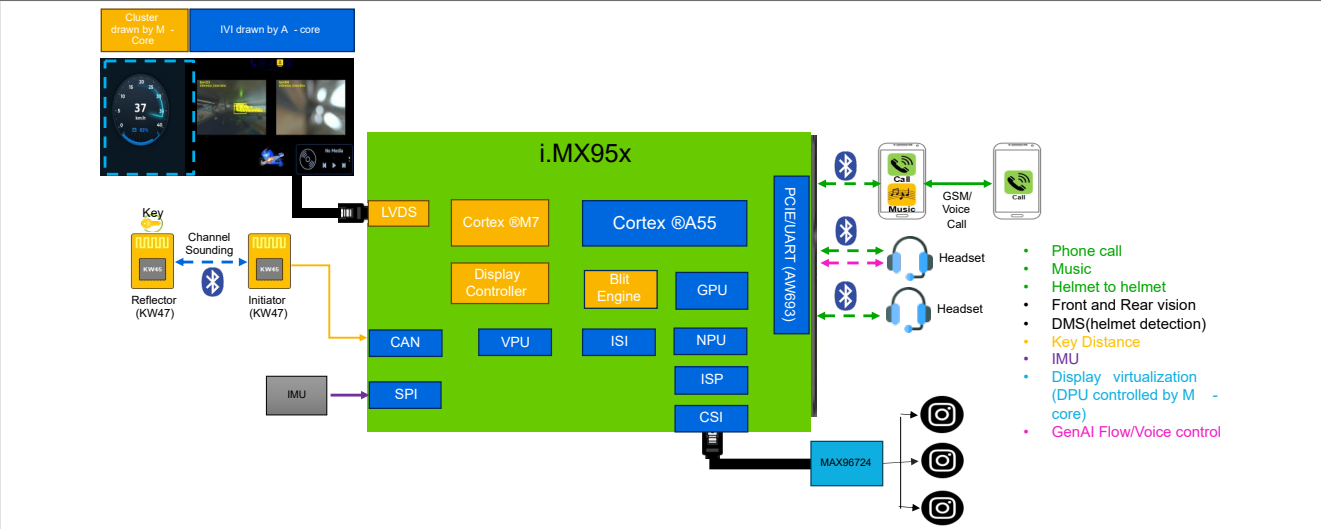


Figure 1. i.MX 95x DCC block diagram

Figure 1 shows how each peripheral connects to the i.MX 95 19 mm × 19 mm EVK board, creating an integrated hardware base for the DCC platform. i.MX95 includes A55 and M7, along with the GPU, DPU, DSI, ISP, NPU, and other on-chip modules within the i.MX95, deliver the computational power, graphics rendering, display management, image processing, and AI acceleration capabilities required for advanced DCC functionality. For vision processing, three cameras, supporting front, rear, and helmet detection, are linked to the EVK board through the Camera Serial Interface (CSI), enabling low-latency video capture and analysis. While the diagram shows a DSI display interface with 1920 × 720 panel, the system can also support 1920 × 1080 PC monitors simply by adjusting the software configuration, offering flexibility for different deployment scenarios. Also, the KW47 module is connected through CAN, providing button distance detection to enhance user interaction and safety features. The Wireless charger feature is also based on the CAN interface. Together, these components create a robust, scalable, and versatile hardware ecosystem capable of supporting a wide range of applications and use cases.

1.1.2 Software architecture

Figure 2 provides information about the detailed software architecture of the DCC.

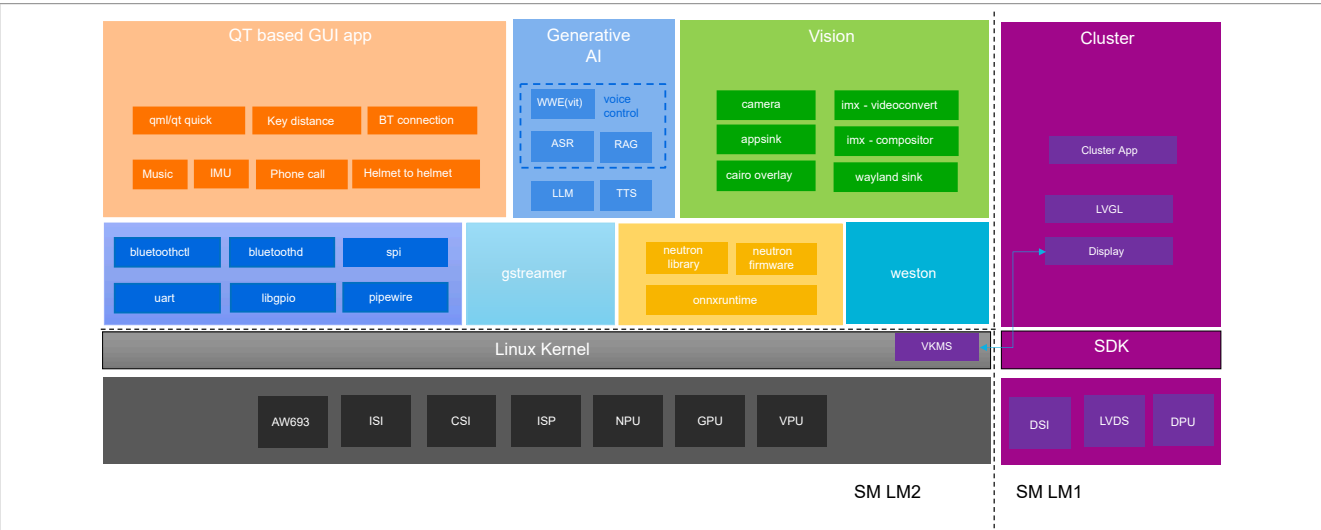


Figure 2. Software architecture

The version is LF6.18.20_2.0.0, and the overall software architecture of the DCC system, illustrated in the accompanying diagram, comprises two primary application modules: M core and A core. The M core is responsible for display and cluster content rendering. The A core is responsible for rendering the In-Vehicle Infotainment (IVI) contents, for the IVI part, it includes key distance, front, rear vision, helmet detection, bluetooth case, and generative AI. At the foundation, the BSP driver layer delivers the essential hardware support for both GUI and Vision, incorporating drivers for components such as Image Sensor Interface (ISI), Camera Serial Interface (CSI), Image Signal Processor (ISP), Neural Processing Unit (NPU), and various other peripheral drivers, collectively enabling a tightly integrated and high-performance system. MCU SDK provides the drivers, such as DSI, LVDS, and Display Processing Unit (DPU), which provides the display virtualization feature.

1.2 Reference

This release includes the following references and additional information:

- [Linux 6.18.20_2.0.0 release](#)
- [i.MX95 application processor](#)
- [DCC article](#)
- [AW693](#)
- [KW47](#)

1.3 Release contents

The release package contains documentations, pre-built images, and source codes.

Table 2. Release contents

Component type	Content	Descriptions
Document	i.MX9_2-Wheeler_DCC_Release_Note_V1.0.pdf	Release Note
	i.MX9_2-Wheeler_User_Guide_V1.0.pdf	User Guide
Pre-built image	imx-image-full-imx95-19x19-lpddr5-evk.rootfs-lvds0-V1.0.wic.zst imx-image-full-imx95-15x15-lpddr4x-frdm.rootfs-lvds0-V1.0.wic.zst imx-image-full-imx952-19x19-lpddr5-evk.rootfs-lvds0-V1.0.wic.zst	i.MX9 DCC prebuild image
Source code	meta-imx-dcc	Source code package of i.MX9 DCC, which includes meta-layer and DCC QT application
	mcuxsdk-examples-dcc	M7 display project directory
	meta-imx-egf	Source code package for Generative AI flow.

[Table 3](#) lists the source code structure of meta-imx-dcc.

Table 3. Code structure

Meta structure		Description	Content
recipes-bsp	u-boot	Patch about default dtb	Change default dtb for evk board.
	imx-mkimage	Enable Cortex-M7	Add the Cortex-M7 binary into the bootloader.

Table 3. Code structure...continued

Meta structure		Description	Content
	imx-system-manager	Hardware resources assignment	Grant Cortex-M7 with permission to access DPU.
recipes-core	systemd	Touch calibration	Modify the touch calibration coordinates
recipes-demo	imx95-dcc-bt	Create bt-related features	Custom bluetoothctl for DCC provides device connection and music control functions.
	imx95-dcc-qt	Create GUI feature	• QML GUI • Key, IMU, and LLM data processing • Bluetooth device status management • Demo logic control via systemd service and shell scripts, and so on • Cluster drive data simulation for standard DCC
	imx95-dcc-vision	Create vision feature	• Front camera - Vision • Rear camera - Vision • DMS - Helmet detection Using SSD-MobileNetV2 for front/rear vision and MobileNetV3 for helmet detection.
	service	Enable auto-run	Setup Bluetooth service • WIFI/BT driver/firmware load • Setup pipewire service • Setup bluealsa service
recipes-graphics	wayland	Modify Weston and Weston-init	• Replace the background. • Create four layers for different apps like QT, front vision, and rear vision.
recipes-kernel	linux	Patches about kernel	• Add dtb for both HDMI and CSI • Enable 1920 × 720 HDMI panel • Add the AW693 module • Add dtb for OX03C10 • Enable inv42605 imu driver • Enable interrupt for icm42605 • Add the vkms driver for display virtualization feature • ...
recipes-multimedia	gstreamer	Patches about gstreamer	Add the waylandsink title for Vision size/position control.

2 Feature supported

[Table 4](#) listed the supported features.

Table 4. Features supported

Supported features	Description
Linux code baseline	Based on Linux 6.18.20-2.0.0
QT GUI (Side-by-Side cluster)	Cluster GUI based on Qt 6.11.0 for user-friendly operation. Key distance and connection indicators are included. Control UI for Bluetooth device connection, music, phone call, Helmet-to-Helmet communication, voice control, and generative AI are included. Visible control UI depends on available feature.
Bluetooth connection	Support functions: - Scan on/off - Connect/Disconnect device - Remove device
Bluetooth music	Bluetooth A2DP bridge. The audio routes from phone to headset through DCC Support functions: - Play - Pause - Previous song - Next song - Lyrics display - Status display
Phone call	Bluetooth HFP Gateway. The call audio is routed from the cell phone to the headset through DCC. Support functions: - Caller ID - Accept/Reject/Terminate Call
Helmet-to-Helmet	Bluetooth SCO bridge. Two helmets communication through DCC
Key distance	Bluetooth Low Energy (Bluetooth LE) channel sounding. Show Key (simulated by KW47 LOC) distance on the GUI.
Front camera - Vision with Neutron	Vision of front camera for object detection, such as pothole, pedestrian, cars, and traffic signs.
Rear camera - Vision with Neutron	Vision of rear camera for Blind spot detection.
Driver Monitor System	DMS for helmet detection. It can warn that the driver is not wearing a helmet to protect the personal safety of the driver.
IMU	Optionally, an external IMU can be used to control the orientation of the on-screen 3D motorcycle model. Two modes are supported: chase-view mode and free-spinning mode.
3D animation	Update 3D motorcycle model.
Display virtualization	The Cluster is quickly displayed through the M core. Once the Linux resources are ready, the DCC GUI is displayed.
Generative AI Flow	Generative AI uses LLMs and RAG to provide relevant answers and support voice control.
CM7 domain for Cluster keeps alive	The cluster remains alive after Linux crashes.

3 Known issues

The standard DCC for i.MX9 has the following limitations or known issues:

Table 5. Known issues

Function	Limitations/Known issues	Workaround/Fix plan
Bluetooth connection	Bluetooth connections may not always be established smoothly.	Attempting to reconnect the BT device.
Music	Audio stuttering sometimes occurs on AW611.	Add antenna to enhanced signal strength or reconnect the BT headset.
Phone call	• Sometimes there is no sound after picking the phone while playing music. • Call status updates may occasionally be out of synchronization with the phone.	Hang up and try again.
Generative AI Flow	Generative AI Flow does not currently support Neutron acceleration.	Neutron acceleration will be supported in next version.
Display	The MIPI interface on the IMX952LP5EVK-19 board does not support a 1920 × 720 resolution panel.	The MIPI DSI interface of the i.MX 952 has limited compatibility with the ADV7535 bridge chip. For non-standard or special resolutions, specific parameter tuning is required.

4 Revision history

[Table 6](#) summarizes the revisions to this document.

Table 6. Revision history

Document ID	Release date	Description
RN00516 v.1.0	04 September 2026	Initial public release

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