

ARN

Android Release Notes

Rev. android-14.0.0_1.2.0 — 19 April 2024

Release notes

Document information

Information	Content
Keywords	Android, i.MX, android-14.0.0_1.2.0
Abstract	i.MX android-14.0.0_1.2.0 is a release for Android 14 on the i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8ULP, i.MX 8QuadMax, and i.MX 8QuadXPlus applications processors of NXP.



1 Release Description

i.MX android-14.0.0_1.2.0 is a release for Android 14 on the i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8ULP, i.MX 8QuadMax, and i.MX 8QuadXPlus applications processors of NXP.

i.MX android-14.0.0_1.2.0 release includes all necessary code, documents, and tools to assist users in building and running Android 14 on the i.MX 8M Mini EVK, i.MX 8M Nano EVK, i.MX 8M Plus EVK, i.MX 8M Quad WEVK/EVK, i.MX 8ULP EVK i.MX 8QuadMax MEK, and i.MX 8QuadXPlus MEK board. The corresponding release quality for each board is listed in the following table.

Table 1. Release description

Platform name	Release quality
i.MX 8M Mini EVK	GA (RFP)
i.MX 8M Nano EVK	GA (RFP)
i.MX 8M Plus EVK	GA (RFP)
i.MX 8M Quad WEVK/EVK	GA (RFP)
i.MX 8ULP (A2 9x9) EVK	GA (RFP)
i.MX 8ULP (A2) EVK	GA (RFP)
i.MX 8QuadMax	GA (RFP)
i.MX 8QuadXPlus	GA (RFP)

The prebuilt images are also included for a quick trial on NXP i.MX 8M Mini EVK, i.MX 8M Nano EVK, i.MX 8M Plus EVK, i.MX 8M Quad WEVK/EVK, i.MX 8ULP EVK, i.MX 8QuadMax MEK, and i.MX 8QuadXPlus MEK Board and Platforms.

This release includes all porting and enhancements based on the Android open source code.

Most of the deliveries in this release are provided in source code with the exception for some proprietary modules/libraries from third parties.

2 Supported Hardware SoC/Boards

The supported hardware system-on-chip (SoCs)/boards are listed as follows:

- i.MX 8M Mini EVK
Supported daughter boards:
 - With DDR4 RAM, ROHM BD71847 PMIC chip
 - With LPDDR4 RAM, NXP PCA9450 PMIC chip, and NXP 88W8987 Wi-Fi/Bluetooth module.
 Supported mother board:
 - Rev. C mother board
- i.MX 8M Nano EVK
Supported daughter boards:
 - With DDR4 RAM, ROHM BD71847 PMIC chip
 - With LPDDR4 RAM, NXP PCA9450 PMIC chip, and NXP 88W8987 Wi-Fi/Bluetooth module
 Supported mother board:
 - Rev. C mother board
- i.MX 8M Plus (Silicon Revision A1) Rev. A EVK Board and Platform
- i.MX 8M Quad WEVK/EVK Rev. A Board and Platform
- i.MX 8ULP (A2) EVK Board and Platform, i.MX 8ULP (A2) EVK 9x9 Board and Platform.

- i.MX 8QuadMax (Silicon Revision B0) MEK Board (Board Rev. B5, Rev. C2, and Rev. E) and Platform
- i.MX 8QuadXPlus (Silicon Revision B0 and C0) MEK Board and Platform

3 Release Package Contents

The android-14.0.0_1.2.0 release package includes the following software and documents.

Table 2. Release package contents

i.MX Android proprietary source code package	<ul style="list-style-type: none"> • <code>imx-android-14.0.0_1.2.0.tar.gz</code>: i.MX Android proprietary source code package to enable Android on i.MX boards. For example, Hardware Abstraction Layer implementation, hardware codec acceleration.
Documents	<p>The following documents are included in <code>android-14.0.0_1.2.0_docs.zip</code>:</p> <ul style="list-style-type: none"> • <i>Android Quick Start Guide (AQSUG)</i>: A document that explains how to run the Android platform on an i.MX board using prebuilt images. • <i>Android User's Guide (AUG)</i>: A document describing procedures for configuring and building this release package. • <i>Android Release Notes (ARN)</i>: A document that introduces key updates and known issues in this release. • <i>i.MX Android Extended Codec Release Notes (IMXACRN)</i>: A document that provides the extended codec information. • <i>i.MX Android Security User's Guide (ASUG)</i>: A document that describes how to do customization work on security features supported by i.MX Android software. • <i>i.MX Graphics User's Guide (IMXGRAPHICUG)</i>: A document that describes GPU 2D API, Tools, Memory, and Application programming guidelines.
Prebuilt images	<p>You can test the Android platform with a prebuilt image on i.MX reference board before building any code:</p> <ul style="list-style-type: none"> • <code>android-14.0.0_1.2.0_image_8mmevk.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8M Mini EVK board. • <code>android-14.0.0_1.2.0_image_8mnevk.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8M Nano EVK board. • <code>android-14.0.0_1.2.0_image_8mpevk.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8M Plus EVK board. • <code>android-14.0.0_1.2.0_image_8mqevk.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8M Quad WEVK/EVK board. • <code>android-14.0.0_1.2.0_image_8ulpevk.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8ULP EVK board and i.MX 8ULP EVK 9x9 board. • <code>android-14.0.0_1.2.0_image_8qmek.tar.gz</code>: Prebuilt images with NXP extended features for the i.MX 8QuadMax MEK board and i.MX 8QuadXPlus MEK board. <p>All prebuilt images are in a separate package. See the <i>Android Quick Start Guide (AQSUG)</i> and <i>Android User's Guide (AUG)</i> to choose the appropriate image.</p>

4 Features

This section contains features in this package.

Table 3. Features

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
Google Android 14 release	Y	Y	Y	Y	Y	Y	Y	Based on android-14.0.0_r22 release
Linux 6.1.57 kernel (merge with AOSP kernel)	Y	Y	Y	Y	Y	Y	Y	Based on Linux OS BSP LF6.1.55-2.2.0 release.
Generic Kernel Image (6.1.57)	Y	Y	Y	Y	Y	Y	Y	Based on AOSP android14-6.1-2024-01_r4
U-Boot	Y	Y	Y	Y	Y	Y	Y	v2023.04.
Trusty OS	Y	Y	Y	Y	Y	Y	Y	-
Graphic-HW	Y	Y	Y	Y	Y	Y	Y	VeriSilicon GC7000NanoUltra GPU with the 6.4.11.p2 driver for i.MX 8M Mini EVK. VeriSilicon GC7000UL GPU with 6.4.11.p2 driver for i.MX 8M Nano EVK and i.MX 8M Plus EVK. VeriSilicon GC7000L GPU with 6.4.11.p2 driver for i.MX 8M Quad EVK. VeriSilicon GCNANOULTRA31 GPU with 6.4.11.p2 driver for i.MX 8ULP EVK. VeriSilicon GC7000XSVX GPU with 6.4.11.p2 driver FOR i.MX 8Quad Max. VeriSilicon GC7000L GPU with 6.4.11.p2 driver for i.MX 8 QuadXPlus.
Graphic-HW 3D acceleration	Y	Y	Y	Y	Y	Y	Y	OpenGL ES1.1/2.0 through GC7000NanoUltra for i.MX 8M Mini EVK. OpenGL ES1.1/2.0/3.1 through GC7000UL for i.MX 8M Nano EVK and i.MX 8M Plus EVK. OpenGL ES1.1/2.0/3.1 through GC7000L for i.MX 8M Quad EVK. OpenGL ES1.1/2.0/3.1 through GCNANOULTRA31 for i.MX 8ULP EVK. OpenGL ES 1.1/2.0/3.1/3.2 through GC7000XSVX for i.MX 8Quad Max MEK.

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
								OpenGL ES 1.1/2.0/3.1 through GC7000L.
Android Neural Network API acceleration	N	Y	Y	Y	Y	Y	Y	<p>Android Neural Network API 1.3 accelerated through GC7000 UL for i.MX 8M Nano EVK.</p> <p>Android Neural Network API 1.3 accelerated through GC7000L for i.MX 8M Quad EVK.</p> <p>Android Neural Network API 1.3 accelerated through NPU for i.MX 8M Plus EVK.</p> <p>Android Neural Network API 1.3 accelerated through GCNANOULTRA31 for i.MX 8ULP EVK</p> <p>Android Neural Network API 1.3 accelerated through GC7000L for i.MX 8Quad XPlus.</p> <p>Android Neural Network API 1.3 accelerated through GC7000XSVX for i.MX 8Quad Max.</p>
Graphic-HW accelerated UI surface composition	Y	Y	Y	Y	Y	Y	Y	<p>OpenGL ES2.0 through GC7000NanoUltra for i.MX 8M Mini EVK.</p> <p>OpenGL ES3.1 through GC7000UL for i.MX 8M Nano EVK and i.MX 8M Plus EVK.</p> <p>OpenGL ES3.1 through GC7000L for i.MX 8M Quad EVK.</p> <p>OpenGL ES3.1 through GCNANOULTRA31 for i.MX 8ULP EVK.</p> <p>OpenGL ES 3.2 through GC7000XSVX for i.MX 8Quad Max MEK.</p> <p>OpenGL ES 3.1 through GC7000L for i.MX 8Quad XPlus MEK.</p>
SCFW	N	N	N	N	N	Y	Y	Version 1.15.0
SECO firmware	N	N	N	N	N	Y	Y	Version 3.8.5.
Boot source	SD/ eMMC	SD/ eMMC	SD/ eMMC	SD/ eMMC	eMMC	SD/ eMMC	SD/ eMMC	-
Splash Screen	Y	Y	Y	Y	Y	Y	Y	-

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
UI (input)	Y	Y	Y	Y	Y	Y	Y	USB Mouse and Multi-touch on the MIPI panel display.
UI (display)	MIPI-DSI-to-HDMI/MIPI panel	MIPI-DSI-to-HDMI/MIPI panel	HDMI/MIPI-to-HDMI/MIPI panel/ LVDS-to-HDMI/ LVDS panel/ dual channel LVDS to HDMI The physical HDMI supports HDMI-CEC	HDMI/MIPI-DSI-to-HDMI/MIPI panel The physical HDMI supports HDMI-CEC	HDMI/MIPI/EPDC	HDMI/MIPI-to-HDMI/MIPI-panel/ LVDS-to-HDMI Display The physical HDMI supports HDMI-CEC	LVDS-to-HDMI/MIPI-to-HDMI Display	i.MX 8M Mini EVK max resolution: <ul style="list-style-type: none"> • MIPI-to-HDMI: 1920x1080 • MIPI Panel: 1080x1920 i.MX 8M Nano EVK max resolution: <ul style="list-style-type: none"> • MIPI-to-HDMI: 1920x1080 • MIPI Panel: 1080x1920 i.MX 8M Plus EVK max resolution: <ul style="list-style-type: none"> • Physical HDMI: 3840x2160 • MIPI-to-HDMI: 1920x1080 • LVDS-to-HDMI: 1280x720 • LVDS panel: 1920x1200 • MIPI panel: 1080x1920 • Dual-channel LVDS to HDMI: 1920x1080 i.MX 8M Quad EVK max resolution: <ul style="list-style-type: none"> • Physical HDMI: 3840x2160 • MIPI-to-HDMI: 1280x720 • MIPI panel: 1080x1920 i.MX 8ULP EVK max resolution: <ul style="list-style-type: none"> • HDMI: 720x480 • MIPI: 720x1280 • EPDC: 1024x758 i.MX 8Quad Max MEK max resolution: <ul style="list-style-type: none"> • physical HDMI: 3840x2160 • LVDS-to-HDMI/MIPI-to-HDMI: 1920x1080 • MIPI panel: 1080x1920 i.MX 8QuadXPlus MEK max resolution: <ul style="list-style-type: none"> • LVDS-to-HDMI/MIPI-to-HDMI: 1920x1080
UI (dual displays, UI mirror displayed on second device)	N	N	Y	Y	N	Y	Y	i.MX 8M Quad EVK and i.MX 8M Plus EVK support MIPI-DSI-to-HDMI and HDMI dual displays. i.MX 8Quad Max MEK and i.MX 8QuadXPlus MEK support dual LVDS-to-HDMI displays.

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
UI (brightness control)	Y	Y	Y	Y	Y	Y	N	With MIPI panel display for all boards. With LVDS panel display for i.MX 8M Plus EVK.
UI-Low Power Display(LPD)	N	N	N		Y	N	N	Share display with RTD core.
Storage - External Media	Y	Y	Y	Y	Y	Y	Y	i.MX 8M Mini EVK and i.MX 8M Nano EVK support U-disk on the USB 2.0 port. i.MX 8M Plus EVK and i.MX 8M Quad EVK support U-disk on the USB Type-A host port. i.MX 8ULP EVK supports U-disk on the USB 0 port and USB 1 port. i.MX 8Quad Max MEK and i.MX 8QuadXPlus MEK support U-disk on the USB 2.0 port.
Connectivity - Ethernet	N	N	N	N	N	N	N	-
Connectivity - Bluetooth wireless technology	Y	Y	Y	Y	Y	Y	Y	Hardware: <ul style="list-style-type: none"> NXP 88W8987 for i.MX 8M Mini EVK LPDDR4 board and i.MX 8M Nano EVK LPDDR4 board NXP 88W8997 for i.MX 8M Plus EVK. PCIE9098 (Murata LBEE5 ZZ1XL) for i.MX 8M Quad EVK Rev. A board, i.MX 8Quad Max MEK and i.MX 8 QuadXPlus MEK. NXP IW416 (v2) for i.MX 8ULP EVK board. Profiles: <ul style="list-style-type: none"> A2DP Source AVRCP BLE Host HSP HID Host HID Device PAN OPP
Connectivity - Wi-Fi	Y	Y	Y	Y	Y	Y	Y	Hardware: <ul style="list-style-type: none"> NXP 88W8987 for i.MX 8M Mini EVK LPDDR4 board

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
								and i.MX 8M Nano EVK LPDDR4 board. • NXP 88W8997 for i.MX 8M Plus EVK board. • PCIE9098 (Murata LBEE5 ZZ1XL) for i.MX 8MQuad EVK Rev. A board, i.MX 8Quad Max MEK and i.MX 8 QuadXPlus MEK board. • NXP IW416 (v2) for i.MX 8ULP EVK board. Features: • STA mode • AP mode • Wi-Fi Direct • AP/STA Concurrency • MAC randomization
Connectivity - USB Tethering	Y	Y	Y	Y	Y	Y	Y	Supports Wi-Fi and Ethernet as upstream.
Power - CPU Freq	Y	Y	Y	Y	N	Y	Y	-
Power - Bus Freq	Y	Y	Y	Y	N	Y	Y	-
ISP	N	N	Y	N	N	N	N	VeriSilicon ISP8000NANO_V1802 with 4.2.2_p24.1 driver/server for i.MX 8M Plus EVK.
Media - Music Play	Y	Y	Y	Y	Y	Y	Y	SSI+WM8524 for i.MX 8M Mini EVK, i.MX 8M Nano EVK, and i.MX 8M Quad EVK. SSI+WM8960+PCM512 (for powersave image) for i.MX 8M Plus EVK. SSI+WM8960 for i.MX 8ULP EVK. WM8960+CS42888+HDMI for i.MX 8Quad Max MEK. WM8960+CS42888 for i.MX 8 QuadXPlus MEK.
Media - Sound Record	Y	Y	Y	Y	Y	Y	Y	PDM for i.MX 8M Mini EVK, i.MX 8M Nano EVK. AK5558 for i.MX 8M Quad EVK. SSI+WM8960+PDM for i.MX 8M Plus EVK. SSI+WM8960 for i.MX 8ULP EVK.

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
								ESAI+CS42888 for i.MX 8Quad Max MEK and i.MX 8 QuadXPlus MEK.
Media-Compress Playback	N	N	Y	N	N	Y	Y	Compress MP3 playback via SOF (Sound Open Firmware)
Media - Video Play	Y	Y	Y	Y	Y	Y	Y	For i.MX 8M Mini, i.MX 8M plus, i.MX 8M Quad, i.MX 8Quad Max, and i.MX 8 QuadXPlus, which have VPU integrated, see the <i>i.MX Android Extended Codec Release Notes</i> (IMXACRN) to find the information about the supported format, resolution, frame rate, and bit rate. For i.MX 8M Nano and i.MX 8ULP, which do not have VPU integrated, the video playback is supported by Google software decoder.
Media-HDR Video Play	N	N	N	Y	N	N	N	-
Media - Camera	Y	Y	Y	Y	Y	Y	Y	OV5640 CSI MIPI camera for i.MX 8M Mini EVK, i.MX 8M Nano EVK, i.MX 8M Quad EVK i.MX 8ULP EVK, i.MX 8Quad Max MEK, and i.MX 8 QuadXPlus MEK. For i.MX 8M Plus EVK: <ul style="list-style-type: none"> • Two Basler cameras (max resolution 1920x1080) • Basler + OV5640 (Basler max resolution 3840x2160 depends on the boot parameter) • Single Basler (max resolution 3840x2160 depends on the boot parameter) • Single OV5640 • Two OS08A20 (max resolution 1920x1080) • Single OS08A20 (max OS08A20 resolution can reach 3840x2160, depending on the boot parameter)

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
Media HDMI RX	N	N	N	N	N	Y	N	-
Media - TVIN	N	N	N	N	N	N	N	-
Media - Dual Camera	Y	Y	Y	Y	Y	Y	Y	-
Media - Camcorder	Y	Y	Y	Y	Y	Y	Y	-
Media - USB Camera	Y	Y	Y	Y	Y	Y	Y	USB camera supports C920, C930, and C270 for i.MX 8M Mini EVK, i.MX 8M Nano EVK, i.MX 8M Quad EVK, i.MX 8M Plus EVK, i.MX 8Quad Max MEK, and i.MX 8QuadXPlus MEK. USB camera supports C270 for i.MX 8ULP EVK, Can only work with the Camera2 Basic application.
Media - USB Mic	Y	Y	Y	Y	Y	Y	Y	-
Media - HDMI audio output	N	N	Y	Y	Y	Y	N	-
Media-DSD Playback	Y	N	N	Y	N	N	N	DSD playback on Audio Expansion Board.
Media-PlayReady DRM	N	N	N	N	N	N	N	-
Media-WideVine DRM	Y	N	Y	Y	N	Y	N	Supports WideVine DRM Level 3 for i.MX 8M Mini EVK with GMS package. Widevine CDM version 18.0 and OPK version 18.4. Supports WideVine DRM Level 1 and Level 3 for i.MX 8M Plus EVK, i.MX 8M Quad EVK, and i.MX 8Quad Max MEK. Widevine CDM version 18.0 and OPK version 18.4.
Media-MCU Playback	Y	N	Y	N	Y	N	N	Audio playback based on: <ul style="list-style-type: none"> • FreeRTOS on the Cortex-M4 core for i.MX 8M Mini EVK. • FreeRTOS on the Cortex-M7 core for i.MX 8M Nano EVK. • FreeRTOS on Cortex-M33 core for i.MX 8ULP EVK.

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8Quad XPlus MEK	Remarks
Media-Hi-Res audio output	Y	N	N	Y	N	Y	Y	High-resolution audio output from Audio. Expansion Board for i.MX 8M Mini EVK and i.MX 8M Quad EVK: <ul style="list-style-type: none"> • 2-channel: 384000, 768000 sampling rate • 4-channel: 48000, 96000, 192000, 384000, 768000 sampling rate • 6-channel: 48000, 96000, 192000, 384000 sampling rate • 8-channel: 48000, 96000, 192000, 384000, 768000 sampling rate For i.MX 8Quad Max MEK and i.MX 8QuadXPlus MEK: <ul style="list-style-type: none"> • 4/6/8-channel: 48000, 96000, 192000 sampling rate
Misc - ADB over USB	Y	Y	Y	Y	Y	Y	Y	-
Misc - Fastboot utility	Y	Y	Y	Y	Y	Y	Y	-
Misc - Factory reset	Y	Y	Y	Y	Y	Y	Y	-
Misc- Recovery mode	Y	Y	Y	Y	Y	Y	Y	Supports installing updates and wiping data.
Powerkey- Suspend & Resume	Y	Y	Y	Y	Y	Y	Y	-
Battery- Charger mode	Y	Y	Y	Y	Y	Y	Y	-
Sensor - Magnetometer	N	N	N	N	N	Y	Y	FXOS8700
Sensor - Accelerometer	N	N	N	N	N	Y	Y	FXOS8700
Sensor - Gyroscope	N	N	N	N	N	Y	Y	FXAS2100
Sensor - Light	N	N	N	N	N	Y	Y	ISL29023
Sensor - Pressure	N	N	N	N	N	Y	Y	MPL3115
Sensor - Temperature	N	N	N	N	N	Y	Y	MPL3115

Table 3. Features...continued

Feature	i.MX 8M Mini EVK	i.MX 8M Nano EVK	i.MX 8M Plus EVK	i.MX 8M Quad EVK	i.MX 8ULP EVK	i.MX 8Quad Max MEK	i.MX 8 Quad XPlus MEK	Remarks
Sensor-Pedometer	N	N	N	N	Y	N	N	-
File Based Encryption	Y	Y	Y	Y	Y	Y	Y	-
USB Accessory	Y	Y	Y	Y	Y	Y	Y	Google AOA v2.0
USB-MTP	Y	Y	Y	Y	Y	Y	Y	-
USB-PTP	Y	Y	Y	Y	Y	Y	Y	-
USB-MIDI	Y	Y	Y	Y	Y	Y	Y	-
Real Time Clock(RTC)	Y	Y	Y	Y	Y	Y	Y	-
Ethernet APK	Y	Y	Y	Y	Y	Y	Y	-
imx-chip-tool APK	N	Y	N	N	N	N	N	Supports Matter devices control tool <code>imx-chip-tool</code> apk.
webGL	Y	Y	Y	Y	Y	Y	Y	-
Vulkan	N	Y	Y	Y	Y	Y	Y	-
OTA for A/B	Y	Y	Y	Y	Y	Y	Y	Supports OTA with secure boot and encrypted boot.
USB Type-C PD	Y	Y	Y	Y	N	Y	Y	Supports power role switch with devices that support USB power delivery.
DM Verity	Y	Y	Y	Y	Y	Y	Y	-
TEE backed Keymint HAL	Y	Y	Y	Y	Y	Y	Y	This is based on i.MX Trusty OS TEE firmware.
TEE backed AVB	Y	Y	Y	Y	Y	Y	Y	This is based on i.MX Trusty OS TEE firmware and secure storage of eMMC chip. In this release, users need to initialize the RPMB part manually.
Neural Networks	N	Y	Y	Y	Y	Y	Y	
Secure boot	Y	Y	Y	Y	Y	Y	Y	Secure boot based on HABv4 for i.MX 8M Mini EVK, i.MX 8M Nano EVK, i.MX 8M Plus EVK, i.MX 8M Quad EVK. Secure boot based on AHAB for i.MX 8ULP EVK, i.MX 8Quad Max MEK and i.MX 8QuadXPlus MEK.
TEE backed security	Y	Y	Y	Y	Y	Y	Y	This is based on i.MX Trusty OS TEE firmware.

5 Multimedia Codecs

For multimedia codecs and features, see *i.MX Android Extended Codec Release Notes* (IMXACRN).

6 Extended Features

An enhanced multimedia experience is available for the Android platform.

This release delivers an error-resilient, feature-rich multimedia solution by extending the existing multimedia features of the Android platform and introduces additional features. Extended codec packages are provided on nxp.com with controlled access because they require additional licensing by a third party. Contact your sales representative for access.

For detailed extended and additional features, see the *i.MX Android Extended Codec Release Notes* (IMXACRN).

7 Change Logs

Compared to the android-14.0.0_1.0.0 release, android-14.0.0_1.2.0 release has the following major changes:

- Upgraded the Android code base from android-14.0.0_r17 to android-14.0.0_r22.
- Upgraded the i.MX kernel from v6.1.55 to v6.1.57.
- Upgraded the GKI kernel from android14-6.1-2023-07_r6 to android14-6.1-2024-01_r4.
- Upgraded ISP from 4.2.2p24 to 4.2.2p24.1
- Upgraded the CTS/VTs tool to 14_r3, and upgraded the STS tool to 14_sts-r24.
- Wi-Fi/Bluetooth: integrated the WCS 24Q1 release.
- Added the i.MX 8QuadMax MEK board Rev. E support.
- Enabled Multi-display launcher.
- Switched Keymint HAL to Rust implementation.
- Released the 64-bit-only image by default, saving 50% of xTS testing effort.
- Added dynamic TV inputs and hot-plug support for HDMI-CEC on i.MX 8M Plus and i.MX 8M Quad.

8 Known Issues and Limitations

The known issues about the hardware and hardware rework instructions are not included in this document. There may be hardware-related reference materials for some reference boards. Make sure to check the link [i.MX Application Processors](#) to see if it is applicable.

Table 4. Known issues and limitations

Issue description	Remarks
The Google USB driver must be installed multiple times for the MTP, PTP, MTP&ADB, PTP&ADB, and ADB function settings.	Some Windows XP environments may display MTP and PTP windows even with only PTP enabled in the device.
U-Boot hangs when erasing Kingston SD card.	U-Boot hangs when sending the erase command on some Kingston SD cards.
Manufacturing protection feature is not supported on i.MX 8ULP, so features that require the manufacturing protection public key like secure unlock and secure provisioning would not be supported.	-

9 Revision History

Revision history

Document ID	Release date	Description
ARN v.android-14.0.0_1.2.0	19 April 2024	i.MX 8ULP EVK, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8Quad XPlus GA release.
ARN v.android-14.0.0_1.0.0	6 February 2024	i.MX 8ULP EVK, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8Quad XPlus GA release.
ARN v.android-13.0.0_2.2.0	24 October 2023	i.MX 8ULP EVK, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8Quad XPlus GA release.
ARN v.android-13.0.0_2.0.0	07/2023	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8QuadXPlus GA release.
ARN v.android-13.0.0_1.2.0	03/2023	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8QuadXPlus GA release.
ARN v.android-13.0.0_1.0.0	01/2023	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8QuadXPlus GA release.
ARN v.android-12.1.0_1.0.0	10/2022	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8QuadXPlus GA release.
ARN v.android-12.0.0_2.0.0	07/2022	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-12.0.0_1.0.0	03/2022	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-11.0.0_2.6.0	01/2022	i.MX 8ULP EVK Beta release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-11.0.0_2.4.0	10/2021	i.MX 8ULP EVK Alpha release, i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-11.0.0_2.2.0	07/2021	i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-11.0.0_2.0.0	04/2021	i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Plus, and i.MX 8M Quad GA release.
ARN v.android-11.0.0_1.0.0	12/2020	i.MX 8M Plus EVK Beta release, and all the other i.MX 8 GA release.
ARN v.android-10.0.0_2.3.0	07/2020	i.MX 8M Plus EVK Beta1 release, and all the other i.MX 8 GA release.
ARN v.android-10.0.0_2.0.0	05/2020	i.MX 8M Mini, i.MX 8M Nano, i.MX 8M Quad, i.MX 8Quad Max, and i.MX 8QuadXPlus GA release.
ARN v.android-10.0.0_2.1.0	04/2020	i.MX 8M Plus Alpha and i.MX 8QuadXPlus Beta release.
ARN v.android-10.0.0_1.0.0	03/2020	Deleted the Android 10 image.
ARN v.android-10.0.0_1.0.0	02/2020	i.MX 8M Mini, i.MX 8M Quad, i.MX 8QuadMax, and i.MX 8QuadXPlus GA release.

Revision history...continued

Document ID	Release date	Description
ARN v.P9.0.0_2.0.0-ga	08/2019	Updated the location of the SCFW porting kit.
ARN v.P9.0.0_2.0.0-ga	04/2019	i.MX 8M, i.MX 8QuadMax, i.MX 8QuadXPlus GA release.
ARN v.P9.0.0_1.0.0-ga	01/2019	i.MX 8M, i.MX 8QuadMax, i.MX 8QuadXPlus GA release.
ARN v.P9.0.0_1.0.0-beta	11/2018	Initial release

Legal information

Definitions

Draft — A draft status on a document indicates that the content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included in a draft version of a document and shall have no liability for the consequences of use of such information.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors.

In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors and its suppliers accept no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Terms and conditions of commercial sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.nxp.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. NXP Semiconductors hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of NXP Semiconductors products by customer.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Suitability for use in non-automotive qualified products — Unless this document expressly states that this specific NXP Semiconductors product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. NXP Semiconductors accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without NXP Semiconductors' warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond NXP Semiconductors' specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies NXP Semiconductors for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond NXP Semiconductors' standard warranty and NXP Semiconductors' product specifications.

Translations — A non-English (translated) version of a document, including the legal information in that document, is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Security — Customer understands that all NXP products may be subject to unidentified vulnerabilities or may support established security standards or specifications with known limitations. Customer is responsible for the design and operation of its applications and products throughout their lifecycles to reduce the effect of these vulnerabilities on customer's applications and products. Customer's responsibility also extends to other open and/or proprietary technologies supported by NXP products for use in customer's applications. NXP accepts no liability for any vulnerability. Customer should regularly check security updates from NXP and follow up appropriately. Customer shall select products with security features that best meet rules, regulations, and standards of the intended application and make the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP.

NXP has a Product Security Incident Response Team (PSIRT) (reachable at PSIRT@nxp.com) that manages the investigation, reporting, and solution release to security vulnerabilities of NXP products.

NXP B.V. — NXP B.V. is not an operating company and it does not distribute or sell products.

Trademarks

Notice: All referenced brands, product names, service names, and trademarks are the property of their respective owners.

NXP — wordmark and logo are trademarks of NXP B.V.

Amazon Web Services, AWS, the Powered by AWS logo, and FreeRTOS — are trademarks of Amazon.com, Inc. or its affiliates.

AMBA, Arm, Arm7, Arm7TDMI, Arm9, Arm11, Artisan, big.LITTLE, Cordio, CoreLink, CoreSight, Cortex, DesignStart, DynamIQ, Jazelle, Keil, Mali, Mbed, Mbed Enabled, NEON, POP, RealView, SecurCore, Socrates, Thumb, TrustZone, ULINK, ULINK2, ULINK-ME, ULINK-PLUS, ULINKpro, μ Vision, Versatile — are trademarks and/or registered trademarks of Arm Limited (or its subsidiaries or affiliates) in the US and/or elsewhere. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved.

Bluetooth — the Bluetooth wordmark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by NXP Semiconductors is under license.

i.MX — is a trademark of NXP B.V.

Matter, Zigbee — are developed by the Connectivity Standards Alliance. The Alliance's Brands and all goodwill associated therewith, are the exclusive property of the Alliance.

Contents

1	Release Description	2
2	Supported Hardware SoC/Boards	2
3	Release Package Contents	3
4	Features	3
5	Multimedia Codecs	13
6	Extended Features	13
7	Change Logs	13
8	Known Issues and Limitations	13
9	Revision History	14
	Legal information	16

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.
