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# Android™ Release Notes

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## 1 Release Description

The i.MX Android™ O8.1.0_2.0.1-ga release is a GA (RFP) release for the Android 8.1 Oreo (O) platform on the i.MX 8QuadMax MEK board applications processors.

i.MX Android O8.1.0_2.0.1-ga release includes all necessary code, documents, and tools to assist users in building and running the Android 8.1 platform on the i.MX 8QuadMax MEK board from scratch. Pre-built images are also included for a quick trial on the following platform:

- i.MX 8QuadMax MEK B0 Board and Platform

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 of 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 8QuadMax MEK B0 Board and Platform

# 3 Release Package Contents

The O8.1.0_2.0.1-ga release package includes the following software and documents.

**Table 1. Release package contents**

| | |
|---|---|
| i.MX Android proprietary source code package | • imx-o8.1.0_2.0.1-ga.zip: i.MX Android proprietary source code package to enable the Android platform on i.MX boards. |
| Documents | The following documents are included in android_o8.1.0_2.0.1-ga_docs.zip:<br>• *Android™ Quick Start Guide* (AQSUG): A document that explains how to run the Android platform on an i.MX board using prebuilt images.<br>• *Android™ User's Guide* (AUG): A document describing procedures for configuring and building this release package.<br>• *Android™ Release Notes* (ARN): A document that introduces key updates and known issues in this release.<br>• *i.MX Android™ Extended Codec Release Notes* (IMXACRN): A document that provides the extended codec information.<br>• *i.MX Graphics User's Guide* (IMXGRAPHICUG): A document that describes GPU 2D API, Tools, Memory, and Application programming guidelines. |
| Prebuilt images | You can test the Android platform with a prebuilt image on an i.MX reference board before building any code:<br>• android_o8.1.0_2.0.1-ga_image_8qmek.tar.gz: Prebuilt images with NXP extended features for the i.MX 8QuadMax MEK board. The extended features include additional multimedia format support.<br><br>All prebuilt images are in a separate package. See the *Android™ Quick Start Guide* (AQSUG) and *Android™ User's Guide* (AUG) to choose the appropriate image. |

**NOTE**

VivanteVTK tool is no longer provided in the Android release package. It is available on https://www.nxp.com/imx6tools (for example: Tools -> Vivante VTK -> VivanteVTK-v6.2.4.p4.1.7.8).

# 4 Features

This section contains features in this package.

**Table 2. Features**

| Feature | i.MX 8QuadMax MEK | Remarks |
|---|---|---|
| Google Oreo 8.1 release | Y | Based on android-8.1.0_r60 release. |
| Linux 4.14.98 kernel (merged with AOSP kernel) | Y | Based on Linux® OS BSP L4.14.98-2.0.0_ga release. |
| U-Boot | Y | v2018.03. |
| Graphic-HW | Y | VeriSilicon GC7000XSVX GPU with 6.2.4.p4 driver. |
| Graphic-HW 3D acceleration | Y | OpenGL ES 1.1/2.0/3.1/3.2 through GC7000XSVX. |

*Table continues on the next page...*

## Table 2. Features (continued)

| Feature | i.MX 8QuadMax MEK | Remarks |
|---|---|---|
| Graphic-HW accelerated UI surface composition | Y | OpenGL ES 3.2 through GC7000XSVX. |
| Boot source | SD/eMMC | - |
| Splash Screen for LVDS | Y | - |
| UI (input) | Y | - |
| UI (display) | HDMI/MIPI panel display | LVDS-to-HDMI/MIPI-to-HDMI/MIPI panel display and physical HDMI display. |
| UI (dual display, HDMI+HDMI, UI mirror displayed on second device) | Y | Supports dual LVDS-to-HDMI display. |
| UI (brightness control) | N | - |
| Storage - External Media | Y | The USB 2.0 port supports udisk, but the USB 3.0 port does not support udisk. |
| Connectivity - Ethernet | Y | - |
| Connectivity - Bluetooth® wireless technology | Y | Qualcomm QCA6174A.<br>Profiles: A2DP Source, AVRCP, BLE Host, HSP, HID Host, HID Device, PAN, and OPP. |
| Connectivity - Wi-Fi | Y | Qualcomm QCA6174A.<br>Features: AP mode, STA mode, and Wi-Fi Direct. |
| Connectivity - USB Tethering | Y | Supports Wi-Fi and Ethernet as upstream |
| Power - CPU Freq | Y | - |
| Power - Bus Freq | Y | - |
| Media - Music Play | Y | WM8960+CS42888+HDMI |
| Media - Sound Record | Y | ESAI+CS42888 |
| Media - Video Play | Y | - |
| Media - Camera | Y | OV5640MIPI |
| Media - TVIN | N/A | PAL/NTSC |
| Media - Dual Camera | Y | Dual OV5640MIPI. |
| Media - Camcorder | Y | - |
| Media - USB Camera | N | - |
| Media - USB Mic | Y | - |
| Media - HDMI audio output | Y | Only i.MX 8QuadMax supports HDMI audio output. |
| Misc - ADB over USB | Y | - |
| Misc - Fastboot utility | Y | - |
| Misc - SW update and factory reset | Y | - |
| Sensor - Magnetometer | Y | FXOS8700 |
| Sensor - Accelerometer | Y | FXOS8700 |
| Sensor - Gyroscope | Y | FXAS2100 |
| Sensor - Light | Y | ISL29023 |
| Sensor - Pressure | Y | MPL3115 |
| Sensor - Temperature | Y | MPL3115 |

*Table continues on the next page...*

**Table 2. Features (continued)**

| Feature | i.MX 8QuadMax MEK | Remarks |
|---|---|---|
| File Based Encryption | Y | - |
| USB Accessory | Y | Google AOA v2.0 |
| Ethernet APK | Y | - |
| webGL | Y | - |
| OTA for A/B | Y | - |
| Vulkan | Y | - |
| USB TYPEC PD | Y | - |
| DM verity | Y | - |

# 5 Multimedia Codecs

For multimedia codecs and features, see Section 5 in the Android 8.1 Compatibility Definition Document(CDD).

# 6 Extended Feature Packages

The release extends the default AOSP Android version with the following features. For more information about the features below, contact "L2manager-android@nxp.com". For detailed extended and additional features, see *i.MX Android™ Extended Codec Release Notes* (IMXACRN).

# 7 Change Log

Compared to the O8.1.0_2.0.0-ga release, this release has the following major changes:

- Updated the SCFW version to support 1.7v PMIC for new i.MX 8QuadMax chips.

# 8 Known Issues and Limitations

The known issues about the hardware and hardware rework instructions are not included in this document. Read all hardware-related reference material and ensure the necessary hardware modifications have been made before using the software.

**Table 3. 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. |

*Table continues on the next page...*

**Table 3. Known issues and limitations (continued)**

| Issue description | Remarks |
|---|---|
| U-Boot will hang when erasing Kingston's SD card. | U-Boot will hang when sending the erasing command on some Kingston SD cards. |
| The display is sometimes black on the i.MX 8QuadMax MEK board. | The display is sometime black with the following log on the i.MX 8QuadMax MEK board.<br><br>`imx-dpu-crtc imx-dpu-crtc.4: flush - wait for content shdld done timeout.`<br><br>It will be fixed in next release. |
| Video cannot be played any more after certain HTML5 H.264 or VP8 video playback on i.MX 8QuadMax MEK and i.MX 8QuadXPlux MEK boards. | It will be fixed in next release. |

# 9 Revision History

**Table 4. Revision history**

| Revision number | Date | Substantive changes |
|---|---|---|
| O8.0.0_1.2.0_8QXP-EAR | 12/2017 | Initial release |
| O8.1.0_1.2.0_8QXP-PRC | 03/2018 | i.MX 8QuadXPlus PRC/Beta release |
| O8.1.0_1.2.0_8QXP-beta2 | 08/2018 | i.MX 8QuadXPlus Beta2 release |
| O8.1.0_2.0.0-beta | 01/2019 | i.MX 8QuadXPlus/8QuadMax Beta release |
| O8.1.0_2.0.0-ga | 04/2019 | i.MX 8QuadXPlus/8QuadMax GA release |
| O8.1.0_2.0.1ga | 06/2019 | i.MX 8QuadMax GA release |

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