

# Android™ Release Notes

## 1 Release Description

The i.MX Android™ 08.1.0\_1.1.0\_AUTO-beta release is an Android Automotive Beta (PRC) release on NXP's i.MX 8QuadXPlus/8QuadMax MEK board and platform, which is based on Oreo 8.1. It supports the device type In-vehicle infotainment defined in <https://source.android.com/devices/automotive/>.

i.MX Android 08.1.0\_1.1.0\_AUTO-beta release includes all necessary code, documents, and tools to assist users in building and running Android Automotive on the i.MX 8QuadXPlus/8QuadMax MEK board from scratch. Pre-built images are also included for a quick trial on the following platforms:

- i.MX 8QuadXPlus/8QuadMax MEK 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.

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## 2 Supported Hardware SoC/Boards

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

- i.MX 8QuadXPlus/8QuadMax MEK Board and Platform

## 3 Release Package Contents

The O8.1.0\_1.1.0\_AUTO-beta release package includes the following software and documents.

**Table 1. Release package contents**

i.MX Android proprietary source code package	<ul style="list-style-type: none"> <li>• imx-o8.1.0_1.1.0_auto-beta.tar.gz: i.MX Android Automotive proprietary source code package to enable Android Automotive on i.MX boards.</li> </ul>
Documents	<p>The following documents are included in android_o8.1.0_1.1.0_auto-beta_docs.tar.gz</p> <ul style="list-style-type: none"> <li>• <i>Android™ Quick Start Guide</i> (AQSUG): A document that explains how to run Android Automotive on an i.MX board using prebuilt images.</li> <li>• <i>Android™ User's Guide</i> (AUG): A document describing procedures for configuring and building this release package.</li> <li>• <i>Android™ Release Notes</i> (ARN): A document that introduces key updates and known issues in this release.</li> <li>• <i>i.MX Android™ Extended Codec Release Notes</i> (IMXACRN): A document that provides the extended codec information.</li> <li>• <i>Android™ Frequently Asked Questions</i> (FAQ): A document that contains the answers to the Frequently Asked Questions (FAQs).</li> <li>• <i>i.MX Graphics User's Guide</i> (IMXGRAPHICUG): A document that describes GPU 2D API, Tools, Memory, and Application programming guidelines.</li> </ul>
Tools	<p>Tools in android_o8.1.0_1.1.0_auto-beta_tools.tar.gz</p> <ul style="list-style-type: none"> <li>• VivanteVTK-v6.2.4.1.7.4.tgz: GPU tools for VeriSilicon GPU 6.2.4 driver. For more information about these tools, see <i>i.MX Graphics User's Guide</i> (IMXGRAPHICUG).</li> <li>• mfgtools.zip: Manufacture tools for i.MX platforms.</li> </ul>
Prebuilt images	<p>You can test Android Automotive with a prebuilt image on i.MX reference board before building any code:</p> <ul style="list-style-type: none"> <li>• android_o8.1.0_1.1.0_auto-beta_image_8qmek.tar.gz: Prebuilt images with NXP extended features for the i.MX 8QuadXPlus/8QuadMax MEK board. The extended features include more multimedia format support.</li> </ul> <p>All prebuilt images are in a separate package. See the <i>Android™ Quick Start Guide</i> (AQSUG) and <i>Android™ User's Guide</i> (AUG) to choose the appropriate image.</p>

## 4 Features

This section contains features in this package.

**Table 2. Features**

Feature	i.MX 8QuadXPlus/ 8QuadMax MEK	Remarks
Google Oreo 8.1 release	Y	Based on android-8.1.0_r1 release.
Linux 4.9.69 kernel	Y	Based on Linux® OS BSP L4.9.51_imx8qxp-beta release.
U-Boot	Y	v2017.03
Graphics-HW	Y	VeriSilicon GC7000L GPU for i.MX 8QuadXPlus, GC7000XSVX GPU for i.MX 8QuadMax with 6.2.4 driver
Graphics-HW 3D acceleration	Y	OpenGL ES 1.1/2.0/3.1 through GC7000L for i.MX 8QuadXPlus, OpenGL ES 1.1/2.0/3.1/3.2 through GC7000XSVX for i.MX 8QuadMax.
Graphics-HW accelerated UI surface composition	Y	OpenGL ES 3.1 through GC7000L for i.MX 8QuadXPlus, OpenGL ES 3.2 through GC7000XSVX for i.MX 8QuadMax.
Boot source	eMMC	-
Splash Screen for LVDS	N	-
UI (input)	Y	-
UI (display)	HDMI display	Supports LVDS-to-HDMI display for i.MX 8QuadXPlus MEK. Supports LVDS-to-HDMI display and physical HDMI display for i.MX 8QuadMax MEK.
UI (brightness control)	N	-
Storage - External Media	Y	-
Connectivity - Ethernet	N	-
Connectivity - Bluetooth® wireless technology	Y	Qualcomm QCA6174A. Profiles: A2DP Source, AVRCP
Connectivity - Wi-Fi	Y	Qualcomm QCA6174A. Features: AP mode.
Connectivity - USB Tethering	N	-
Power - CPU Freq	Y	-
Power - Bus Freq	Y	-
Media - Music Play	Y	ESAI+CS42888 (no support for multichannel)
Media - HDMI audio output	N	-
Misc - ADB over USB	Y	-
Misc - Fastboot utility	Y	-
Misc - SW update and factory reset	Y	-
File-based Encryption	Y	-
Screen Recording	Y	-
Ethernet APK	N	-

*Table continues on the next page...*

**Table 2. Features (continued)**

Feature	i.MX 8QuadXPlus/ 8QuadMax MEK	Remarks
webGL	Y	-
OTA for A/B	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

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. For more information and details, contact "L2manager-android@nxp.com"

## 7 Change Log

Compared to the O8.1.0\_1.1.0\_AUTO-EAR release, this release has the following major changes:

- Enabled Android Automotive Projection over USB.
- Shorten Android Automotive boot time to 12 seconds on i.MX 8QuadMax and 16 seconds on i.MX 8QuadXPlus.

## 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.
Bluetooth wireless technology is not enabled in the default prebuilt image for i.MX 8QuadXPlus/8QuadMax MEK.	To enable Bluetooth wireless technology, request the wcnss_filter binary from Qualcomm.
Physical HDMI output is unstable on the i.MX 8QuadMax MEK board.	HDMI output keeps showing penguin or black screen sometimes when booting the Android platform with physical HDMI.

*Table continues on the next page...*

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

Issue description	Remarks
MIPI DSI to HDMI output flickers seriously or even no output with some HDMI monitors on i.MX 8QuadXPlus MEK.	It is a hardware known issue due to DPLL jitter on the current A0 chip. Later B0 chip will fix the issue.
Bluetooth HFP call from outside of the board does not trigger anything on the UI.	It is an Android automotive launcher issue.
Bluetooth HFP sound from the Audio Out ports has a lot of noise.	The PCM signal is cut. It is a third-party (Murata) firmware issue.
USB Tethering is not supported in this release.	To enable USB Tethering, add "CONFIG_IP6_NF_MATCH_RPFILTER=y" to \${MY_ANDROID}/vendor/nxp-opensource/kernel_imx/arch/arm64/configs/android_car_defconfig.

## 9 Revision History

**Table 4. Revision history**

Revision number	Date	Substantive changes
O8.1.0_1.1.0_AUTO-EAR	02/2018	Initial release
O8.1.0_1.1.0_AUTO-beta	05/2018	i.MX 8QuadXPlus/8QuadMax Beta release

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Document Number: ARN  
Rev. 08.1.0\_1.1.0\_AUTO-beta  
05/2018

