

RN00227

Android Automotive Release Notes

Rev. automotive-14.0.0_2.3.0 —
23 January 2025

Release notes

Document information

Information	Content
Keywords	Android, i.MX, Automotive, automotive-14.0.0_2.3.0, RN00227
Abstract	The i.MX Android automotive-14.0.0_2.3.0 release is an Android Automotive GA (RFP) release on NXP's i.MX 8QuadXPlus/8QuadMax MEK board and platform, a Beta release on NXP's i.MX 95 EVK board and platform, and an experimental release on NXP's i.MX 95 Verdin board and platform.



1 Release Description

The i.MX Android automotive-14.0.0_2.3.0 release is an Android Automotive GA (RFP) release on NXP's i.MX 8QuadXPlus/8QuadMax MEK board and platform, a Beta release on NXP's i.MX 95 EVK board and platform, and an experimental release on NXP's i.MX 95 Verdin board and platform. The release is based on Android 14. It supports the device type in-vehicle infotainment defined in <https://source.android.com/devices/automotive/>.

i.MX Android automotive-14.0.0_2.3.0 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 and i.MX 95 EVK/Verdin boards from scratch. Pre-built images are also included for a quick trial on the following platforms:

- i.MX 8QuadXPlus/8QuadMax MEK Board and Platform
- i.MX 95 EVK/Verdin Boards and Platform

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

Most of the deliveries in this release are provided in the source code except 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 8QuadMax (Silicon Revision B0) MEK Board and Platform
- i.MX 8QuadXPlus (Silicon Revision B0, C0) MEK Board and Platform
- i.MX 95 (Silicon 19x19 Revision A1) EVK and Verdin Boards and Platform

3 Release Package Contents

The automotive-14.0.0_2.3.0 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">• <code>imx-automotive-14.0.0_2.3.0.tar.gz</code>: i.MX Android Automotive proprietary source code package to enable Android Automotive on i.MX boards. For example, Hardware Abstraction Layer implementation, and hardware codec acceleration.
Documents	<p>The following documents are included in <code>android_automotive-14.0.0_2.3.0_docs.zip</code>:</p> <ul style="list-style-type: none">• <i>Android Automotive Release Notes</i> (RN00227): A document that introduces key updates and known issues in this release.• <i>Android Automotive User's Guide</i> (UG10176): A document describing procedures for configuring and building this release package.• <i>Android Automotive Quick Start Guide</i> (UG10177): A document that explains how to run Android Automotive on an i.MX board using prebuilt images.• <i>i.MX Android Extended Codec Release Notes</i> (RN00202): A document that provides the extended codec information.• <i>i.MX Android Security User's Guide</i> (UG10158): 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</i> (UG10159): A document that describes graphics APIs, Tools, Memory, and Application programming guidelines.
Prebuilt images	<p>You can test Android Automotive with a prebuilt image on the i.MX reference board before building any code:</p> <ul style="list-style-type: none">• <code>automotive-14.0.0_2.3.0_image_8qmek_car.tar.gz</code>: Prebuilt-image for i.MX 8QuadXPlus/8QuadMax MEK board with the Exterior View System (EVS) function enabled in the ARM Cortex-M4 CPU core during Android OS

Table 1. Release package contents...continued

	<p>boot process when the EVS function is switched to the Cortex-A CPU core, which includes NXP extended features.</p> <ul style="list-style-type: none">• <code>automotive-14.0.0_2.3.0_image_8qmek_car2.tar.gz</code>: Prebuilt-image for i.MX 8QuadMax/8QuadXPlus MEK board with the EVS function enabled in the ARM Cortex-A CPU core only (EVS function is available after starting the Android OS from Cortex-A core), which includes NXP extended features.• <code>automotive-14.0.0_2.3.0_image_95evk_car.tar.gz</code>: Prebuilt-image for i.MX 95 EVK board with the the Exterior View System (EVS) function enabled in the ARM Cortex-M7 CPU core during Android OS boot process when the EVS function is switched to the Cortex-A CPU core, which includes NXP extended features.• <code>automotive-14.0.0_2.3.0_image_95evk_car2.tar.gz</code>: Prebuilt-image for i.MX 95 EVK/Verdin boards with the EVS function enabled in the Arm Cortex-A CPU core only (EVS function is available after starting Android OS from Cortex-A core), which includes NXP extended features. <p>All prebuilt images are in a separate package. See the <i>Android Automotive User's Guide</i> (UG10176) and <i>Android Automotive Quick Start Guide</i> (UG10177) to choose the appropriate image.</p>
--	--

4 Features

This section describes the features in this package.

Table 2. Features

Feature	i.MX 8QuadXPlus/8QuadMax MEK	i.MX 95 EVK	Remarks
Google Android 14 release	Y	Y	Based on android-14.0.0_r55 release.
Linux 6.6.36 kernel (merged with the AOSP kernel)	Y	Y	Based on Linux OS BSP LF6.6.36_2.1.0-rc1 release.
Generic Kernel Image (6.6.30)	Y	Y	Based on AOSP android15-6.6-2024-08.
U-Boot	Y	Y	v2024.04.
Trusty OS	Y	Y	-
Graphics-HW	Y	Y	VeriSilicon GC7000L GPU for i.MX 8QuadXPlus, GC7000XSVX GPU for i.MX 8QuadMax with 6.4.11.p2 driver, Mali-G310 GPU with r47p0-01eac0 driver for i.MX 95.
Graphics-HW 3D acceleration	Y	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, OpenGL ES1.1/2.0/3.2 through Mali-G310 for i.MX 95.
Graphics-HW accelerated UI surface composition	Y	Y	OpenGL ES 3.1 through GC7000L for i.MX 8QuadXPlus, OpenGL ES 3.2 through GC7000XSVX for i.MX 8QuadMax, OpenGL ES3.2 through Mali-G310 for i.MX 95.
SCFW	Y	N	Version 1.17.0.
SECO firmware	Y	N	Version 3.8.5 for i.MX 8QuadMax B0, i.MX 8QuadXPlus B0, and i.MX 8QuadXPlus C0.
Boot source	eMMC	eMMC	-

Table 2. Features...continued

Feature	i.MX 8QuadXPlus/ 8QuadMax MEK	i.MX 95 EVK	Remarks
Splash Screen	Y	Y	Supports the USB mouse.
UI (input)	Y	Y	-
UI (display)	HDMI display	Y	Maximum display resolution for i.MX 8QuadMax: Physical HDMI: 3840 x 2160 LVDS-to-HDMI/MIPI-to-HDMI: 1920 x 1080 Maximum display resolution for i.MX 8QuadXPlus: LVDS-to-HDMI/MIPI-to-HDMI: 1920 x 1080 Maximum display resolution for i.MX 95: MIPI-to-HDMI: 1920 x 1080 LVDS-to-HDMI: 1920 x 1080
UI (brightness control)	N	N	-
Storage - External Media	Y	Y	-
Connectivity - Ethernet	Y	Y	Atheros AR8031.
Connectivity - Bluetooth wireless technology	Y	Y	PCIE9098 (Murata LBEE5ZZ1XL) for i.MX 8QuadMax and 8QuadXPlus. PCIE9098 (U-Blox JODY-W3) for i.MX 95. Profiles: A2DP Sink, AVRCP, BLE Host, HFP, PBAPClient, MAPMCE, PAN.
Connectivity - Wi-Fi	Y	Y	PCIE9098 (Murata LBEE5ZZ1XL) for i.MX 8QuadMax and 8QuadXPlus. PCIE9098 (U-Blox JODY-W3) for i.MX 95. Features: STA mode, AP mode, AP/STA Concurrency.
Connectivity - USB Tethering	Y	Y	Supports Wi-Fi as upstream.
Power - CPU Freq	Y	Y	-
Power - Bus Freq	Y	Y	-
Media - Music Play	Y	Y	i.MX 8/95: SAI+WM8960 or WM8962. i.MX 8: ESAI+CS42888 (no support for multichannel) i.MX 95: SAI+CS42888 (no support for multichannel)
Media - HDMI audio output	N	N	-
Misc - ADB over USB	Y	Y	-
Misc - Fastboot utility	Y	Y	-
Misc - SW update and factory reset	Y	Y	-
File-based Encryption	Y	Y	-
webGL	Y	Y	-
Vulkan	Y	Y	-
USB TYPEC PD	Y	Y	-
OTA for A/B	Y	Y	-
TEE backed Keymaster HAL	Y	Y	This is based on the i.MX Trusty OS TEE firmware.

Table 2. Features...continued

Feature	i.MX 8QuadXPlus/ 8QuadMax MEK	i.MX 95 EVK	Remarks
TEE backed AVB	Y	Y	This is based on the i.MX Trusty OS TEE firmware and secure storage of eMMC chip. In this release, the RPMB part needs to be initialized manually.
Media rearview camera	Y	Y	MAX9286 camera for i.MX 8QuadMax and 8Quad XPlus, max96724 with Camera sensors OX03C10 for i.MX 95.
Car Audio Policy	Y	Y	All sounds are played from the audio jack on the CPU board. Rear zone audio is played to an extended audio board (CS42888 codec). Rear zone audio is an optional audio path.

5 Multimedia Codecs

For multimedia codecs and features, see the *i.MX Android Extended Codec Release Notes* (RN00202).

6 Change Logs

Compared to the automotive-14.0.0_2.1.0 release, automotive-14.0.0_2.3.0 has the following major changes:

- Upgraded the Android code base from android-14.0.0_r34 to android-14.0.0_r55.
- Upgraded the i.MX kernel from v6.6.30 to v6.6.36.
- Upgraded the GKI kernel from android15-6.6 to android15-6.6-2024-08.
- Added support of the i.MX8QM MEK board rev. E.
- Added support of the deserializer max96724 with Camera sensors OX03C10 for the i.MX 95 EVK board.
- Wi-Fi/Bluetooth integrated WCS 24Q3 release.
- Upgraded SCFW from Version 1.16.0 to Version 1.17.0.
- Upgraded the CTS tool to android-cts-14.0_r5, upgraded the VTS tool to android-vts-14.0_r55 (build from the r55 source code), upgraded the STS tool to 14_sts-r30.
- Upgraded OEMCrypto from v18.5 to v18.6.
- Supports EdgeLock Secure Enclave HAL for i.MX 95.
- Supports the encrypted boot feature on i.MX 95.

7 Known Issues and Limitations

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

Table 3. Known issues and limitations

Issue description	Remarks
For i.MX 8QuadXPlus silicon revision B0 chip, it fails to boot from some types of eMMC.	<p>In the default settings, the UUU script burns the boot image into the eMMC Boot Partition with 32 KB offset. Although it works properly on the MEK board, it fails to read the boot image on some types of eMMC.</p> <p>There are two possible solutions:</p> <ul style="list-style-type: none">• Download <code>flash.bin</code> in the eMMC Boot Partition + 0 KB offset + eMMC fastboot enabled in fuse.

Table 3. Known issues and limitations...continued

Issue description	Remarks
	<ul style="list-style-type: none"> Download <code>flash.bin</code> in the eMMC User Partition + 32 KB offset (eMMC fastboot can be either enabled or disabled in fuse). For more information, see https://community.nxp.com/docs/DOC-342877 .
The camera may freeze if only one camera is connected to the MAX9286 board.	This issue will be fixed in a future release.
Sound Open Firmware (SOF) is not working with i.MX 8QuadXPlus.	This issue is related to the image flashed using the <code>-d sof</code> option (<code>dtbo-imx8qxp-sof.img</code>). When the SOF dtbo image is used, the media audio is routed to i.MX 8QuadXPlus DSP (running SOF) but the SOF is crashing during boot (DSP crash observed in kernel log). This affects the media audio, in which case the CS42888 codec audio is not working.
Kernel panic when copying a file through MTP (file transfer mode) with the disabled ADB.	The file is not copied to the target. The copy operation freezes. The issue is caused by "ERR050149: USB3: TRB OUT endpoints transfer blockage and performance delays".
Dual Hotspots cannot be used simultaneously with the Wi-Fi station.	Simultaneous usage of dual hotspots (AP+AP concurrency) with the Wi-Fi station (board connected to the external network) is not supported (STA+AP+AP concurrency is not supported).
Boot animation is not available when starting the Car image type.	Boot animation is terminated earlier than starting the <code>init</code> process.
Multi-display configuration shows nothing on the unused displays.	When using a multi-display configuration, the unused displays are black. Additional tasks can still be launched on them.
EVS functionality degraded on the Car2 image.	Camera output is available after starting the surface flinger.
Screen recording from the front camera is not available.	ISI.0 channel resource conflict. ISI.0 channel is using the front camera and VPU encoder at the same time.
Changing the HVAC-Auto button value to OFF with the <code>report</code> or <code>echo</code> command does not work by default after boot.	The Auto button has to be interacted on the HVAC UI at least once. Then, the <code>report</code> or <code>echo</code> command works. This issue will be fixed in a future release.
Power consumption increases when running the EVS application.	The current EVS AIDL HAL implementation contains two buffer types, camera and display. EVS AIDL copies bitmaps between the two buffers by the CPU. This issue will be fixed in a future release.
For i.MX 95 EVK, the USB-Type C port vbus is connected to a 3.3v power source. Once it is connected to the host and successfully enumerated by the host, the gadget stage is changed to be configured, and the USB HAL acquires its wakelock. Disconnection from the host does not generate a disconnection interrupt. The gadget state keeps unchanged, and the USB HAL does not release its wakelock.	-
For i.MX 8QuadMax, the 9098 Wi-Fi is plugged in the PCIeB slot (base board). The 9098 Wi-Fi firmware loading failed after the Android Automotive OS reboot.	It is a base board design issue. The M.2 slot on the base board does not connect the <code>#W_DISABLE1</code> and <code>#SDIO_WAKE</code> signals to the i.MX 8QuadMax chip. The Wi-Fi module 9098 requires to configure these PADs during the boot/start process.
For the i.MX 95 EVK Car image type, the display is not working in Android recovery mode.	Display drivers are not available in the vendor RAM disk, and the display output is empty in Andorid recovery mode. This issue will be fixed in a future release.

Table 3. Known issues and limitations...continued

Issue description	Remarks
For i.MX 95 EVK Car/Car2 image types, the Gallery application, top bar menu, is not visible (but still works) after interacting with pictures.	The top bar menu can reappear after reconnecting touch or after reopening the application.
For i.MX 8QuadMax, power consumption increases in suspend to RAM mode.	Linux BSP 6.6.23 RC2 has the same VCC_1V8 and VCC_MAIN increasement in suspend to RAM mode. This issue will be fixed in a future release.
For i.MX 8QuadMax, the board stays offline (no ADB or fastboot connection) during reboot stress test. The issue is reproducible after 1000 iteration (around 12 hours).	This issue will be fixed in a future release.
Red Box takes place of Google Maps inside the Home Screen.	When switching between menus tabs (Home -> Apps -> Home), the Google Maps View is colored fully red. When the program goes from one tab to another, the Activity of the switched tab vanished. Therefore, when the program goes back from tab Apps to Home, the problem with data synchronization occurs. Then, Google Maps View turns to red as the default color. When restarting the Home tab (by clicking on it), the Maps is restarted properly.
ADB connection lost after "adb kill-server" or switching to USB tethering.	This issue is possible to reproduce under the platform-tools version 35.0.0 and above. The ADB device is available again after disconnecting and connecting the USB cable to the USB host (PC).
The command <code>adb kill-server</code> causes lose of ADB connection.	The connection is recovered only if the <code>sudo</code> is used in <code>sudo adb start-server</code> . This issue is available from the Android build tools version 35 and above. This issue will be fixed in a future release.
For i.MX 95 EVK Car/Car2 image types, the Linux kernel can crash during the reboot of the Android Automotive OS.	The Linux kernel can crash during unmounting the Android file system on the end Android reboot process. This issue will be fixed in a future release.
The board loses ADB connection after switching to PTP or MTP on i.MX QuadMax Rev. E.	This issue occurs when the board is switched manually and when the Default USB Configuration switch test switches between MTP and PTP for 12 hours.
The temperature switches between values by itself after HVAC Power off and on.	After setting the temperature values to 70 degrees Fahrenheit though the following commands: <pre>adb shell "echo 1101529088 > /sys/devices/platform/vehicle-dummy/temp_right" adb shell "echo 1101529088 > /sys/devices/platform/vehicle-dummy/temp_left"</pre> And after pressing the HVAC POWER button Off and then On, the values of the temperatures become random values and they keep switching between 70 and other values until plus or minus are pressed.
GFXBench is unable to run.	Google issue (permission issue). A ticket to Google issue tracker has been created.
For i.MX 95 EVK Car/Car2 image types, the system cannot enter deep suspend through the power button.	This issue will be fixed in a future release.

8 Revision History

This table provides the revision history.

Table 4. Revision history

Document ID	Release date	Description
RN00227 v.automotive-14.0.0_2.3.0	23 January 2025	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release, i.MX 95 EVK (Silicon Revision A1 19x19) Beta, and i.MX 95 Verdin (Silicon Revision A1 19x19) Experimental
RN00227 v.automotive-14.0.0_2.1.0	7 November 2024	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release, i.MX 95 EVK (Silicon Revision A1 19x19) Alpha (EAR)
AARN_14.0.0_1.1.0	20 June 2024	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-13.0.0_2.3.0	4 January 2024	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-13.0.0_2.1.0	10/2023	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-13.0.0_1.3.0	07/2023	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-13.0.0_1.1.0	05/2023	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-12.1.0_1.1.0	12/2022	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-12.0.0_2.1.0	09/2022	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-12.0.0_1.1.0	06/2022	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-11.0.0_2.5.0	03/2022	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-11.0.0_2.3.0	12/2021	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0, C0) GA release
automotive-11.0.0_2.1.0	11/2021	Added the examples for i.MX 8QuadXPlus and upgraded the tool version
android-11.0.0_1.1.0-AUTO	01/2021	i.MX 8QuadXPlus/8QuadMax MEK GA release
android-10.0.0_2.4.0	07/2020	i.MX 8QuadMax MEK GA release
android-10.0.0_2.2.0-AUTO	06/2020	i.MX 8QuadXPlus/8QuadMax MEK GA release
automotive-10.0.0_1.1.0	03/2020	i.MX 8QuadXPlus/8QuadMax MEK (Silicon Revision B0) GA release
P9.0.0_2.1.0-AUTO-ga	08/2019	Updated the location of the SCFW porting kit
P9.0.0_2.1.0-AUTO-ga	04/2019	i.MX 8QuadXPlus/8QuadMax Automotive GA release
P9.0.0_1.0.2-AUTO-beta	01/2019	i.MX 8QuadXPlus/8QuadMax Automotive Beta release
P9.0.0_1.0.2-AUTO-alpha	11/2018	i.MX 8QuadXPlus/8QuadMax Automotive Alpha release
O8.1.0_1.1.0_AUTO-beta	05/2018	i.MX 8QuadXPlus/8QuadMax Beta release

Table 4. Revision history...continued

Document ID	Release date	Description
O8.1.0_1.1.0_AUTO-EAR	02/2018	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.

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.

Suitability for use in automotive applications — This NXP product has been qualified for use in automotive applications. If this product is used by customer in the development of, or for incorporation into, products or services (a) used in safety critical applications or (b) in which failure could lead to death, personal injury, or severe physical or environmental damage (such products and services hereinafter referred to as "Critical Applications"), then customer makes the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, safety, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP. As such, customer assumes all risk related to use of any products in Critical Applications and NXP and its suppliers shall not be liable for any such use by customer. Accordingly, customer will indemnify and hold NXP harmless from any claims, liabilities, damages and associated costs and expenses (including attorneys' fees) that NXP may incur related to customer's incorporation of any product in a Critical Application.

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.

HTML publications — An HTML version, if available, of this document is provided as a courtesy. Definitive information is contained in the applicable document in PDF format. If there is a discrepancy between the HTML document and the PDF document, the PDF document has priority.

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.

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, µVision, 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.

TensorFlow, the TensorFlow logo and any related marks — are trademarks of Google Inc.

Contents

1 Release Description 2

2 Supported Hardware SoC/Boards 2

3 Release Package Contents 2

4 Features 3

5 Multimedia Codecs 5

6 Change Logs 5

7 Known Issues and Limitations 5

8 Revision History 8

Legal information 10

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