

Android™ Release Notes

1 Release Description

The i.MX Android™ N7.1.2_1.1.0_7ULP-PRC release is a PRC (Beta) release for the Android 7.1 Nougat (N) platform on i.MX 7ULP applications processors.

i.MX Android N7.1.2_1.1.0_7ULP-PRC release includes all necessary code, documents, and tools to assist users in building and running the Android 7.1 platform on the i.MX 7ULP hardware boards. Pre-built images are also included for a quick trial on the following platforms:

- i.MX 7ULP EVK 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 and the binary needed to boot the ARM Cortex-A7 core from the ARM Cortex-M4.

2 Supported Hardware SoC/Boards

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

- i.MX 7ULP EVK board and platform

Contents

1	Release Description.....	1
2	Supported Hardware SoC/Boards.....	1
3	Release Package Contents.....	2
4	Features	2
5	Multimedia Codecs.....	4
6	Extended Feature Packages.....	4
6.1	Extended multimedia feature package.....	4
6.2	Microsoft® codec support.....	5
6.3	RealMedia support.....	5
6.4	Dolby digital audio.....	5
7	Change Log.....	5
8	Known Issues and Limitations.....	6
9	Revision History.....	6



3 Release Package Contents

The N7.1.2_1.1.0_7ULP-PRC release package includes the following software and documents.

Table 1. Release package contents

Android source code patch	<ul style="list-style-type: none"> android_N7.1.2_1.1.0_7ULP-PRC_source.tar.gz: i.MX-specific patches (apply to Google Android repository) to enable the Android platform on i.MX-based boards. For example, Hardware Abstraction Layer implementation and hardware codec acceleration.
Documents	<p>The following documents are included in android_N7.1.2_1.1.0_7ULP-PRC_docs.tar.gz</p> <ul style="list-style-type: none"> <i>Android™ Quick Start Guide</i> (AQSUG): A document that explains how to run the Android platform on an i.MX board using prebuilt images. <i>Android™ User's Guide</i> (AUG): A detailed document for this release package. <i>Android™ Release Notes</i> (ARN): A document that introduces key updates and known issues in this release. <i>i.MX Android™ Extended Codec Release Notes</i> (IMX6ACRN): A document that provides the extended codec information.
Tools	<p>Tools in android_N7.1.2_1.1.0_7ULP-PRC_tools.tar.gz</p> <ul style="list-style-type: none"> MFGTool: Manufacturing tools for i.MX platform. Vivanteimx_4.1.33_7ulp_beta.tgz: GPU tools for Vivante GPU 6.2.0 p2 driver. For more information about these tools, see <i>i.MX Graphics User's Guide</i> (IMXGRAPHICUG).
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"> android_N7.1.2_1.1.0_7ULP-PRC_image_7ulpevk.tar.gz: Prebuilt images with NXP extended features for the i.MX 7ULP EVK board. The extended features include more multimedia format support. <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. HDMI display is not supported.

Table 2. Features

Feature	i.MX 7ULP EVK	Remarks
Linux 4.1.33 kernel	Y	Based on Linux® OS BSP L4.1.33_imx7ulp-beta release
Google Nougat 7.1 release	Y	Based on android-7.1.2_r5
Boot source	External SD	-
Splash Screen for MIPI display	Y	-
UI (input)	USB Mouse/Single-touch on LCD panel	-
UI (display)	MIPI LCD panel	HDMI display is not supported.

Table continues on the next page...

Table 2. Features (continued)

Feature	i.MX 7ULP EVK	Remarks
UI (dual display, LVDS+HDMI, UI mirror displayed on second device)	N	-
UI (brightness control)	Y	-
Storage - External Media	Y	UDisk
Connectivity - Ethernet	N/A	-
Connectivity - Bluetooth® wireless technology	Y	Hardware: <ul style="list-style-type: none"> • Broadcom BCM4343W Profiles: <ul style="list-style-type: none"> • A2DP Source • A2DP Sink • HID • OPP • PBAP • AVRCP • PAN • FTP • BLE Host
Connectivity - Wi-Fi	Y	Hardware: <ul style="list-style-type: none"> • Broadcom BCM4343W Features: <ul style="list-style-type: none"> • AP mode
Connectivity - USB Tethering	N	Supports Wi-Fi as upstream
Power - CPU Freq	Y	-
Power - Bus Freq	Y	-
Media - Music Play	Y	-
Media - Sound Record	Y	-
Media - Video Play	Y	-
Media - Camera	N	-
Media - TVIN	N/A	-
Media - Dual Camera	N	-
Media - Camcorder	N	-
Media - USB Camera	Y	Logitech: <ul style="list-style-type: none"> • C920 • C525 • C270
Media - USB Mic	Y	-
Media - HDMI audio output	N/A	-
Graphic - HW 3D acceleration	Y	OpenGL ES 1.1/2.0 via GC7000 NanoUltra
Graphic - HW accelerated UI surface composition	Y	-
Misc - ADB over USB	Y	-
Misc - Fastboot utility	N	-

Table continues on the next page...

Table 2. Features (continued)

Feature	i.MX 7ULP EVK	Remarks
Misc - SW update and factory reset	Y	-
Sensor - Magnetometer	N	-
Sensor - Accelerometer	N	-
Sensor - Gyroscope	N/A	-
Sensor - Light	N	-
Sensor - Pressure	N/A	-
Sensor - Temperature	N/A	-
NTFS-3G File System	Y	For external storage
NAND	N	-
Wi-Fi Display Source	N/A	-
Data Partition Encryption	N	-
USB Accessory	N	Google AOA v2.0
Screen Recording	N/A	-
Ethernet APK	N	-
webGL	Y	-
UIBC in Wi-Fi Display Source	N/A	-

5 Multimedia Codecs

For multimedia codecs and features, see Section 5 in the [Android 7.1 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".

6.1 Extended multimedia feature package

An enhanced multimedia experience is available for the Android platform. This package delivers an error-resilient, feature-rich multimedia solution by extending the existing multimedia features of the Android platform and introduces additional features. Extended and additional features include:

- Local playback
 - Enhanced Codecs, Demultiplexer, and File Format support
 - MOV, AVI, ASF, FLV, MPEG-PS, MPEG-TS, and RealMedia
 - WMA, ADTS, APE, Real Audio, Opus, AC3, DD+
- Streaming playback
 - More formats supported in HTTP

- RTP
- UDP

For more information, see *i.MX Android Extended Codec Release Notes (IMX6ACRN)*.

6.2 Microsoft® codec support

Licensed package feature support is described in the following table.

Table 3. Microsoft codec support

File extension	Demuxers	Video decoders	Audio decoders
.wma	ASF	-	WMA STD, PRO, Lossless

6.3 RealMedia support

Licensed package feature support is described in the following table.

Table 4. RealMedia support

File extension	Demuxers	Video decoders	Audio decoders
.ra	RM	-	RA Cook AAC

6.4 Dolby digital audio

NXP provides two Dolby Digital Audio solutions which can be integrated into the Extended Multimedia Package:

- Dolby Digital (AC-3) with support for Audio Pass-through
- Dolby Digital Plus

7 Change Log

Compared to the N7.1.1_1.1.0_7ULP-EAR release, this release has the following major changes:

- Upgraded the Android code base from android-7.1.1_r13 to android-7.1.2_r5.
- Supported the onboard input key.
- Supported the suspend/resume power related functions.
- Upgraded the Wi-Fi and Bluetooth BCM20702 release version to 1.141.100.6.
- Supported the factory reset and software update functionality.

8 Known Issues and Limitations

Read all hardware-related reference material and ensure the necessary hardware modifications have been made before using the software.

Table 5. Known issues and limitations

Issue description	Remarks
Google USB driver for Windows® OS must be installed multiple times for the MTP, PTP, MTP&ADB, PTP&ADB, and ADB function settings.	Some Windows XP OS environments may display MTP and PTP Windows OS even though PTP only is enabled in the device.
System may be down or panic when bootup with the following error information: 'mmcblk0: error -110 sending status command'	This issue may be raised on the sdr104 card.
The board cannot boot up when it is connected with the PC through the USB cable on the USB OTG port.	Hardware issue
Audio playback fails if the screen is off and the USB OTG cable is not connected.	Still under debugging.

9 Revision History

Table 6. Revision history

Revision number	Date	Substantive changes
N7.1.2_1.1.0_7ULP-PRC	06/2017	Initial release

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