Freescale Semiconductor
Application Note

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Android Release Notes

Contents

1 Release Description

i.MX Android jb4.2.2_1.0.0-ga is a GA release for Android 4.2.2 Jelly Bean (JB) on Freescale's i.MX 6Quad, i.MX 6Dual, i.MX 6DualLite and i.MX 6Solo applications processors.

i.MX Android jb4.2.2_1.0.0-ga release includes all necessary code, documents, and tools to assist the users in building and running Android 4.2.2 on the i.MX 6Quad and i.MX 6DualLite hardware boards from scratch. The pre-built images are also included for a quick trial on Freescale i.MX 6Quad SABRE-SD Board and Platform, i.MX 6DualLite SABRE-SD Platform and i.MX 6Quad and i.MX 6DualLite SABRE-AI Platforms. This release includes all Freescale porting and enhancements based on 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 Freescale proprietary codec implementation.

2 Supported Hardware SoC/ Boards

- i.MX 6Quad SABRE-SD Board and Platform
  - Full function tests
- i.MX 6DualLite SABRE-SD Platform

    - Full function tests
- i.MX 6Quad and i.MX 6DualLite SABRE-AI Platform
    - Full function tests

3 Release Package Contents

The jb4.2.2_1.0.0-ga release package includes the following software and documents:

Android source code patch	All Freescale i.MX specific patches (applicable to Google Android repo) to enable Android on i.MX based boards. For example Hardware Abstraction Layer implementation, hardware codec acceleration, etc. Packed in android_jb4.2.2_1.0.0-ga_source.tar.gz
Documents	The following documents are included in android_jb4.2.2_1.0.0-ga_docs.tar.gz • Android Quick Start Guide: A manual that explains how to run Android on an i.MX board by using prebuilt images. • Android User's Guide: A detailed manual for this release package. • Android Frequently Asked Questions: A document that contains Frequently Asked Questions (FAQs). • Android Release Notes: A document that introduces key updates and known issues in this release. • Android Codec Release Notes: A document that introduces key updates and known issues of the multimedia codecs part of the BSP release.
Tools	Tools in android_jb4.2.2_1.0.0-ga_tools.tar.gz • MFGTool: Manufacturing tools for i.MX platform. • tool/tetherxp.inf: USB tethering windows .inf driver configuration file.
Prebuilt images	You can test Android with a prebuilt image on i.MX board before building any code: • android_jb4.2.2_1.0.0-ga_image_6qsabresd.tar.gz: Prebuilt images for the SABRE-SD board. • android_jb4.2.2_1.0.0-ga_image_6qsabreauto.tar.gz: Prebuilt images for the SABRE-AI board. All prebuilt images are in another package. See Android Quick Start Guide and Android User's Guide to understand which image should be used in which case.

4 Features

Feature	i.MX 6Quad SABRE-SD Board and Platform	i.MX 6DualLite SABRE-SD Platform	i.MX 6Quad, i.MX 6DualLite SABRE-AI Platform	Comments
Linux 3.0.35 kernel	Y	Y	Y	Based on i.MX 6Quad BSP L3.0.35_4.0.0 GA release
Google Jelly Bean 4.2.2 release	Y	Y	Y	Based on android-4.2.2_r1 release

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Bootup with Android	Y	Y	Y	
Boot source	eMMC, External SD	eMMC, External SD	SD, NAND **NOTE:** For differences between SD and External SD, see Android User Guide and FAQs for boot from different sources.	Default NAND chip supported is Micron MT29F8G08ABABAWP
Splash Screen for LVDS	Y	Y	N	
UI (input)	Multi-touch on LVDS panel	Multi-touch on LVDS panel	Multi-touch on LVDS panel	
UI (display)	LVDS panel, HDMI display	LVDS panel, HDMI display	LVDS panel, HDMI display	
UI (dual display, LVDS +HDMI, UI mirror displayed on second device)	Y	Y	Y	
UI (brightness control)	Y	Y	Y	
UI (LiveWallpaper)	Y	Y	Y	
Storage - External Media	Y	Y	Y	SD, External SD and UDisk
Storage - MTP (Media Transfer Protocol)	Y	Y	Y	
Connectivity - Ethernet	Y	Y	Y	
Connectivity - BT	Y	Y	N	Atheros AR3001 Atheros AR3002 Profiles: A2DP HID OPP PBAP
Connectivity - WiFi	Y	Y	Y	Hardware: Atheros AR6103 SDIO card Features: AP mode Wake on Wireless
Connectivity - 3G	Y	Y	N	Hardware: HUAWEI EM770W modem Infineon Amazon 1 modem

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				ZTE FM210 modem
Connectivity - GPS	Y	Y	N	Locosys AH-1613
Connectivity - USB Tethering	Y	Y	N	Supports Wi-Fi or Ethernet as upstream
Internet - VPN	Y	Y	Y	
Power - Battery status report	Y	Y	N/A	Known limitations about the accuracy in some use cases
Power - CPU Freq	Y	Y	Y	
Power - Bus Freq	Y	Y	Y	
Media - Music Play	Y	Y	Y	SSI WM8962 for SABRE-SD; ESAI CS42888 for SABRE-AI;
Media - Sound Record	Y	Y	Y	SSI WM8962 for SABRE-SD; ESAI CS42888 for SABRE-AI;
Media - Video Play	Y	Y	Y	
Media - Camera	Y	Y	Y	
Media - TVIN	N/A	N/A	Y	
Media - Dual Camera	Y	Y	Y	Hardware for Sabre SD: Front Camera: OV5642 CSI camera Rear Camera: OV5640 MIPI camera Hardware for Sabre AI: Front Camera: UVC camera Rear Camera: TV IN
Media - Camcorder	Y	Y	Y	
Media - USB Camera	Y	Y	Y	Logitech: C250 E3500
Media - USB Micro	Y	Y	Y	
Media - Movie Studio	Y	Y	Y	
Media - HDMI audio output	Y	Y	Y	
Graphic - HW 3D acceleration	Y	Y	Y	OpenGL-ES 1.1/2.0 via GC2000 or GC880 3D core
Graphic - HW accelerated UI surface composition	Y	Y	Y	
Misc - ADB over USB	Y	Y	Y	

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Misc - Fastboot utility	Y	Y	Y	
Misc - SW update and factory reset	Y	Y	Y	
Sensor - Magnetometer	Y	Y	N	Freescale MAG3110
Sensor - Accelerometer	Y	Y	N	Freescale MMA8451Q
Sensor - Light	Y	Y	N	Intersil ISL29023
NTFS-3G File System	Y	Y	N	For external Storage
NAND	N/A	N/A	Y	Tested NAND chip: - Micron 29F8G08ABABA

5 Multimedia Codecs

See the details about Multimedia Codec in the "Android Codec Release Notes" document included in the release package.

6 Change Lists

When compared to the ICS release, major changes in this release are outlined below:

- Default Android multiple display implementation in Jelly Bean
- Display resolution change in setting is not supported
- New camera hal implementation based on Jelly Bean libcamera2
- Added NTFS file system support for external storage

7 Known Issues and Limitations

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

Issue Description	Comments
The power key on SABRE-SD board is not supported as a result of the SoC being unable to detect the power key press or release event on i.MX 6Quad TO1.1 and i.MX 6DualLite TO1.0 SABRE-SD boards.	VOL_DN on SABRE-SD is mapped as power key on i.MX 6Quad TO1.1 and i.MX 6DualLite TO1.0 SABRE-SD boards. On SABRE-SD i.MX 6Quad TO1.2 or i.MX 6DualLite TO1.1 or higher boards, VOL_DN is used again and the SW1 (power button) is used as the power key.
Huawei EM770W 3G modem with China Mobile SIM card consumes too much power which will flash the LVDS screen.	
ENGR00217530 Battery level info is incorrect when charged in MX6DQ/ MX6DL SABRE-SD board. 100%	To resolve this issue, add a fuel gauge in hardware.
UI is Landscape while camera preview is portrait on SABRE-SDP board	SABRE-SDP board issue. See "i.MX Android 13.4.1 Camera issue on SDP board" for more details.

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PCIe does not support Hot Plug and Power Management.	PCIe Intel Wi-Fi source code has been integrated into this release. However, PCIe is not enabled by default because the power management is not supported. See https://community.freescale.com/docs/DOC-94045 about the instructions to enable PCIe WiFi.

8 CTS Known Issues

Please reference "CTS and CTS-Verifier Test Report" for detail information.

CTS results on i.MX 6Quad Sabre-SD board

CTS Summary: 10 failed in 17979 cases.

CTS-Verifier Summary: 4 failed in 132 cases.

Test Case	Comments
android.accessibilityservice.cts.AccessibilityTextTraversalTest #testActionNextAndPreviousAtGranularityPageOverText	Known issue. See: https://code.google.com/p/android/issues/detail?id=52827
android.app.cts.SystemFeaturesTest#testLocationFeatures	Known issue which can be fixed by including the Google location provider APK.
android.dpi.cts.AspectRatioTest#testAspectRatio	Known issue. See: http://code.google.com/p/android/issues/detail?id=32649 The root cause is setRequestedOrientation of activity can't make sure it's a sync call. CTS should wait for its orientation change to be completed.
android.hardware.cts.CameraTest#testJpegExif	Known issue which can be fixed by changing the code myandroid/hardware/mx6/libcamera2/JpegBuilder.cpp with below update: replace the gmtime (ampsTv.tv_sec) with localtime (ampsTv.tv_sec) in prepareImage() function.
android.hardware.cts.CameraTest#testVideoSnapshot	Known issue which can be fixed by changing the code myandroid/hardware/mx6/libcamera2/JpegBuilder.cpp with the below update: replace the gmtime (ampsTv.tv_sec) with localtime (ampsTv.tv_sec) in prepareImage() function.
Four cases in android.media.cts.StreamingMediaPlayerTest	Known issues due to the VPN network in our test room not stable
android.renderscript.cts.ProgramStoreTest#testProgramStoreBuilder	Still being checked.

CTS results for i.MX 6Solo/6DualLite Sabre-AI board

CTS Summary: 81 failed in 17979 cases.

CTS-Verifier Summary: 5 failed in 85 cases.

Test Case	Comments
android.app.cts.ActivityManagerMemoryClassTest#testGetMemoryClass	Known issue for ARD been set to 140 dpi. Can be fixed by changing the density setting in myandroid/device/fsl/sabreauto_6q/init.rc as "setprop ro.sf.lcd_density 160".
android.app.cts.SystemFeaturesTest#testBluetoothFeature	Known issue due to not enable Bluetooth for ARD board.
android.app.cts.SystemFeaturesTest#testLocationFeatures	Known issue which can be fixed by including the Google location provider APK.
android.bluetooth.cts.BasicAdapterTest#test_getDefaultAdapter	Known issue due to not enable Bluetooth for ARD board.
android.dpi.cts.ConfigurationTest#testScreenConfiguration	Known issue for ARD been set to 140 dpi. Can be fixed by changing the density setting in myandroid/device/fsl/sabreauto_6q/init.rc as "setprop ro.sf.lcd_density 160"
android.hardware.cts.CameraGLTest	Known issue due to not having on board camera for the ARD board.
android.hardware.cts.CameraTest	Known issue due to not having on board camera for the ARD board.
24 cases in android.holo.cts.HoloTest	Known issue for ARD been set to 140 dpi. Can be fixed by changing the density setting in myandroid/device/fsl/sabreauto_6q/init.rc as "setprop ro.sf.lcd_density 160".
2 cases in android.location.cts.LocationManagerTest	Known issue, which can be fixed by removing the below two features in myandroid/sabreauto_6q/required_hardware.xml <feature name="android.hardware.location"/> <feature name="android.hardware.location.network"/>
2 cases in android.media.cts.CamcorderProfileTest	Known issue due to not having on board camera for the ARD board.
4 cases in android.media.cts.MediaPlayerTest related with video recording	Known issue due to not having on board camera for the ARD board.
3 cases in android.mediastress.cts.MediaRecorderStressTest	Known issue due to not having on board camera for the ARD board.
android.os.cts.BuildVersionTest#testBuildFingerprint	Known issue due to the property ro.build.fingerprint in system.img have more than 92 characters. It can be fixed by making the device name or board name shorter.

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