

# i.MX 6 SABRE-SD Linux Release Notes

## 1 Release Contents

This document contains important information about the package contents, supported features, and known issues/limitations.

Additionally, the following sections contain release contents and license information.

### Supported HW SoC/Board

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

## 1.1 Contents

This release consists of the following package files:

- L3.10.17\_1.0.0\_20140404\_Yocto\_release.tar.gz
- L3.10.17\_1.0.0\_20140404\_images\_MX6.tar.gz
- L3.10.17\_1.0.0\_20131223\_docs.tar.gz

The release version is named as

"L<Kernel\_version>\_<x.y.z>\_<yymmdd>."

"<Kernel\_version>": BSP Kernel version. (For example, "L3.10.17" indicates that this BSP release is based on the kernel version 3.10.17.)

### Contents

1	Release Contents.....	1
1.1	Contents.....	1
1.2	License.....	3
2	System Requirements.....	3
2.1	Linux Host Server.....	3
2.2	SABRE-SD Board Components. ....	3
3	What's New?.....	3
3.1	New Features.....	4
3.2	Supported Power Management Features.....	4
3.3	Defect Fixes.....	4
4	BSP Supported Features i.MX 6 SABRE-SD.....	5
5	Kernel Boot Parameters.....	8
6	Known Issues/Limitations for i.MX 6 SABRE-SD.....	11

## Release Contents

"<x.y.z>": Semantic versioning specification, where X is the major version, Y is the minor version and Z is the patch version.

"<yymmdd>": Release candidate build date.

Tables below list the contents included in each package:

**Table 1. Release Metadata**

Package	Version	Boards Supported
Linux Kernel	3.10.17	Sabre Board for Smart Devices (MCIMX6Q-SDB), Sabre Platform for Smart Devices (MCIMX6Q-SDP), SABRE Platform for Smart Devices (MCIMX6DL-SDP)
U-Boot	2013.04	Sabre Board for Smart Devices (MCIMX6Q-SDB), Sabre Platform for Smart Devices (MCIMX6Q-SDP), SABRE Platform for Smart Devices (MCIMX6DL-SDP)

**Table 2. L3.10.17\_1.0.0\_20140404\_images\_MX6.tar.gz Content**

File	Description
u-boot-imx6qsabresd_sd.imx	U-Boot boot loader for the Sabre Board for Smart Devices (MCIMX6Q-SDB), Sabre Platform for Smart Devices (MCIMX6Q-SDP) Board and Platform.
u-boot-imx6dlsabresd_sd.imx	U-Boot boot loader for the Sabre Board for Smart Devices (MCIMX6DL-SDB), Sabre Platform for Smart Devices.
u-boot-imx6qsabresd_sata.imx	U-Boot boot loader for the Sabre Board for Smart Devices (MCIMX6Q-SDB), Sabre Platform for Smart Devices (MCIMX6Q-SDP).
ulmage_imx_v7_defconfig	Binary kernel image for Linux 3.10.17 kernel.
ulmage-imx6q-sabresd.dtb	Device Tree files.
ulmage-imx6q-sabresd-hdcp.dtb	The *ldo.dtb is used for LDO-enabled feature support. By default, the LDO bypass is enabled. If your board has the cpu@1.2GHZ, you should use *ldo.dtb instead, because LDO bypass mode is not supported on the cpu@1.2GHZ.  The *hdcp.dtb is used to enable the DHCP feature support due to pin conflict.
ulmage-imx6q-sabresd-ldo.dtb	
ulmage-imx6dl-sabresd.dtb	
ulmage-imx6dl-sabresd-hdcp.dtb	
ulmage-imx6dl-sabresd-ldo.dtb	
ulmage-imx6sl-evk.dtb	Device Tree files.
ulmage-imx6sl-evk-csi.dtb	
ulmage-imx6sl-evk-ldo.dtb	
fsl-image-x11-imx6qdlisolosdcard	Yocto SD card image, including the boot loader, dtb, kernel image and also the rootfs.
mfgtools_with_rootfs.tar.gz	Manufacturing tools support with manufacturing tools kernel.

**Table 3. L3.10.17\_1.0.0\_20140404\_yocto.tar.gz Content**

File	Description
EULA	FreescAlE End User License Agreement

*Table continues on the next page...*

**Table 3. L3.10.17\_1.0.0\_20140404\_yocto.tar.gz Content (continued)**

Freescale_Yocto_Project_Users_Guide.pdf	Freescale Yocto Project User's Guide
Freescale README for L3.10.17-1.0.0-beta	Freescale README for L3.10.17-1.0.0-beta

**Table 4. L3.10.17\_1.0.0\_20131223\_docs.tar.gz Content**

File	Description
EULA	Freescale End User License Agreement
doc/mx6	i.MX 6 Linux BSP Release Notes, User's Guide, and Reference Manual

## 1.2 License

All source code files of the Board Support Package (BSP) are either GNU General Public License (GPL), GNU Lesser General Public License (LGPL), or another open source license.

The following binary files contained in the included root file systems are built from proprietary source not included in the BSP:

Files in package `gpu-viv-bin-mx6q-L3.10.17_1.0.0-hfp.bin`

## 2 System Requirements

The following subsections introduce the system requirements.

### 2.1 Linux Host Server

For more information, please see *Freescale Yocto User Guide*

### 2.2 SABRE-SD Board Components

To find out more about SABRE-SDB components, see SABRE-SDB Quick Start Guide (SABRESDB\_IMX6\_QSG), which is available here: [http://www.freescale.com/files/32bit/doc/user\\_guide/IMX6SABREINFOQSG.pdf?fpsp=1](http://www.freescale.com/files/32bit/doc/user_guide/IMX6SABREINFOQSG.pdf?fpsp=1). To find out more about SABRE-SDP components, see SABRE-SDP Quick Start Guide (SABRESDP\_IMX6\_QSG), which is available here: [http://www.freescale.com/files/32bit/doc/quick\\_start\\_guide/SABRESDP\\_IMX6\\_QSG.pdf?fpsp=1](http://www.freescale.com/files/32bit/doc/quick_start_guide/SABRESDP_IMX6_QSG.pdf?fpsp=1)

## 3 What's New?

This section describes the changes in this release including new features and defect fixes.

## 3.1 New Features

See git log for the complete list of new features and enhancements since the last release.

A summary of the main new features is as follows:

- Released based on the Yocto project
- Supports the GCC 4.8.1 toolchain with the hardware float point build
- The U-BOOT upgraded to v2013.04 version with the device tree
- The Linux kernel upgraded to stable tree v3.10.17 with the device tree
- The GPU driver upgraded to Vivante 4.6.9p13 version
- Weston upgraded to 1.3.1
- Supports the manufacturing tool
- Supports SD3.0 DDR/SDR mode
- Supports GPU WebGL 1.0.1 on the Google chrome browser
- Supports the U-BOOT splash screen
- Supports the SSI single channel
- Supports the PCIe driver
- Supports USB HSIC
- Supports OCOTP under U-Boot
- Supports USB mass storage under U-Boot
- Supports the USB camera in host mode
- Supports the battery charge LED
- Supports the /dev/iim char device

## 3.2 Supported Power Management Features

- CPUIdle framework support with two working levels: purely WFI and WFI with wait mode enabled.
- CPUFreq driver support: CPU frequency adjusted based on the CPU loading, Interactive governor
- CPU/GPU frequency throttle
- VPU/GPU dynamic power management
- Low power mode support: standby and dormant(mem) mode
- LDO bypass support
- Thermal temperature support
- BUSFreq support
- SD3.0 dynamically clock management
- USB remote wake-up and USB charger

## 3.3 Defect Fixes

See the log of each git repo by using the command git log, for the list of the defects fixed in this release. Only hot fixes are listed here.

- ARM: 7669/1: keeps `_my_cpu_offset` consistent with the generic one
- ARM: 7957/1: adds DSB after the icache flushes in `__flush_icache_all()`
- ENGR00306309 ARM:imx:imx6qdl: fixes the procedure to switch the parent of `LDB_DI_CLK`
- ENGR00306276: iMX6: adds workaround for ARM errata 761320 and 794072
- ENGR00306257: fixes the system hang-up issue caused by the GPU
- ENGR00301095 gpu: the GPU hangs up when the DMA memory is used up

## 4 BSP Supported Features i.MX 6 SABRE-SD

Table below describes the features that are supported in this BSP release.

**Table 5. Supported Features for i.MX 6 SABRE-SD**

Feature	Supported	Comments
<b>Kernel</b>		
Kernel	Yes	Kernel version: 3.10.17
File System	Yes	EXT2/EXT3/EXT4 are used as the file system in MMC/SD Hard Disk.
<b>Boot Loader</b>		
U-Boot	Yes	<ul style="list-style-type: none"> <li>U-Boot delivery is based on U-Boot version v2013.04.</li> <li>Supports DDR3 528MHz@64bit (on i.MX 6Dual/6Quad) or DDR3 400MHz@64bit (on i.MX 6Solo/6DualLite), ENET, UART, MMC/SD, eMMC4.3/4.4/4.41, SPI-NOR, SATA, Clock, Anapop regulator, High Assurance Boot, and ROM Plug-in Mode.</li> </ul>
<b>Machine Specific Layer</b>		
ARM Core	Yes	Supports Cortex-A9. Supports reboot and power-off.
Memory	Yes	The user/kernel space is split 2G/2G.
Interrupt	Yes	GIC
Clock	Yes	Controls system frequency and clock tree distribution.
Timer (GPT)	Yes	System timer tick support.
GPIO/EDIO	Yes	GPIO is initialized in earlier phase according to hardware design.
IOMUX	Yes	Provides the interfaces for I/O configuration. IOMUX-V3 version is used.
<b>DMA Engine</b>		
SDMA	Yes	Conforms to DMA engine framework.
<b>Character Device Drivers</b>		
MXC UART	Yes	Console support via internal Debug UART4.
<b>Graphic Drivers</b>		
Frame Buffer Driver	Yes	MXC Frame buffer driver for IPU V3.
VDOA	Yes	Supports Video Data Order Adapter.
LVDS	Yes	Supports HannStar LVDS panel. It's the default display if no other video option is setup.
HDMI	Yes	Supports the on-chip DesignWare HDMI hardware module.
HDCP	Yes	Supports HDCP v1.2 specifications.
WVGA panel	Yes	Supports SEIKO WVGA panel.
MIPI Display	Yes	Supports MIPI DSI driver through MIPI daughter card.
<b>Multimedia Drivers</b>		
IPU V3 driver	Yes	Provides the interfaces to access IPU V3 modules.
V4L2 Output	Yes	The V4L2 output driver uses the IPU post-processing functions for video output.
V4L2 Capture	Yes	Supports dual camera.
VPU	Yes	Encoder: MPEG-4, H.263, H.264(AVC/MVC), MJPEG Decoder: MPEG-4, H.263, H.264(AVC/MVC), VC-1, MPEG-2, MJPEG, AVS, VP8.

*Table continues on the next page...*

**Table 5. Supported Features for i.MX 6 SABRE-SD (continued)**

CSI Camera	Yes	Supports OV5640 camera sensor.
MIPI-CSI	Yes	Supports OV5640 camera sensor.
<b>Power Management Drivers</b>		
Anatop Regulator	Yes	Supports Anatop regulator management.
Lower Power mode	Yes	Supports: standby mode and dormant (mem) mode.
CPUIdle	Yes	2 levels CPU idle supported: purely WFI and WFI with wait mode enabled.
CPUFreq	Yes	CPUFreq can be used for CPU frequency adjustment. The Interactive governor is added and enabled by default.
BusFreq	Yes	Supports the system bus clock frequency scaling.
Battery charging	Yes	
<b>Sound Drivers</b>		
S/PDIF	No	Support 16bit and 24bit stereo playback from 32KHz to 48KHz sample rate. Support 24bit stereo record from 16KHz to 96KHz.
WM8962/SSI	Yes	
ASRC	Yes	Support sample rates conversion from 5KHz to 192KHz and output sample rates from 32kHz to 192KHz.
HDMI Audio	Yes	
<b>Input Device Drivers</b>		
Touch panel	Yes	Supports eGalax capacitive touch screen driver.
Keypad	No	
USB devices	Yes	Supports USB mouse and USB keypad via USB ports.
<b>MTD driver</b>		
SPI-NOR	Yes	Supports SPI-NOR flash.
<b>Networking Drivers</b>		
ENET	Yes	Supports AR8031 PHY.
IEEE 1588	Yes	Supports IXXAT V1.05.03 stack. Supports Linuxptp stack. Features: <ul style="list-style-type: none"> <li>• Supports IPv4, IPv6, IEEE 802.3 transport.</li> <li>• Supports E2E, P2P transparent clock.</li> <li>• Supports IEEE802.1AS-2011 in the role of end station.</li> </ul> Note: IXXAT V1.05.03 stack is commercial authorization from IXXAT. Linuxptp stack is open source. Command instance: <pre>ptp_main_1.05.03 -d -t -o -z -i 0:eth0                 ptp4l -A -4 -H -m -i eth0</pre>
PCIe	Yes	PCI Express with internal PHY support
<b>Security Drivers</b>		
CAAM	Yes	
SNVS	Yes	

Table continues on the next page...

**Table 5. Supported Features for i.MX 6 SABRE-SD (continued)**

<b>General drivers</b>		
SNVS RTC	Yes	Low power section only.
uSDHC	Yes	- Supports SDHC2, SDHC3,SDIN5C2-8G via SDHC4. - SD2.0 support - eMMC 1bit/4bit/8bit SDR/DDR mode.
Watchdog	Yes	Supports Watchdog reset.
I2C	Yes	Supports I2C master.
SPI	Yes	Supports SPI master mode.
PWM	Yes	Supports the backlight driver via PWM.
Temperature monitor	Yes	Requires chip calibration data.
Accelerometer	Yes	Support MMA8451 sensor.
Ambient Light Sensor	Yes	Support ISL29023 sensor.
Magnetometer Sensor	Yes	Supports MAG3110 driver.
Wi-Fi	Yes	Supports AR6003 Wi-Fi.
<b>USB Drivers</b>		
USB	Yes	- Supports USB OTG2.0 port. - USB Host mode: MSC, HID, UVC, USB audio. - USB device mode: MSC, Ethernet, Serial. - USB OTG pin detect.

**Table 6. Supported Features Specifically for i.MX 6Dual/6Quad SABRE-SD**

GPU	Yes	GC2000, GC355 and GC320. <ul style="list-style-type: none"> <li>• Supports EGL 1.4 for fbdev, X, directFB, Wayland1.3</li> <li>• Supports OpenGL ES1.1</li> <li>• Supports OpenGL ES2.0 (WebGL 1.0.1 compatible on X)</li> <li>• Supports OpenVG1.1</li> <li>• Supports OpenCL1.1</li> <li>• Supports OpenGL2.1</li> </ul>
<b>USB Drivers</b>		
USB Host	Yes	Supports USB HOST1 and USB OTG host.
USB Device	Yes	Supports USBOTG device mode.
SATA	Yes	Supports serial ATA 3.0 and AHCI Revision 1.3

**Table 7. Supported Features Specifically for i.MX 6Solo/6DualLite SABRE-SD**

Feature	Supported	Comments
<b>Kernel</b>		

*Table continues on the next page...*

**Table 7. Supported Features Specifically for i.MX 6Solo/6DualLite SABRE-SD (continued)**

EPDC	Yes	<p>Enable EPDC:</p> <ul style="list-style-type: none"> <li>- Support for RGB565 frame buffer format.</li> <li>- Support for Y8 frame buffer format.</li> <li>- Support for full and partial EPD screen updates.</li> <li>- Support for up to 256 panel-specific waveform modes.</li> <li>- Support for automatic optimal waveform selection for a given update.</li> <li>- Support for synchronization by waiting for a specific update request to complete.</li> <li>- Support for screen updates from an alternate (overlay) buffer.</li> <li>- Support for automated collision handling.</li> <li>- Support for 64 simultaneous update regions.</li> <li>- Support for pixel inversion in a Y8 frame buffer format.</li> <li>- Support for posterization of the update contents (driving all pixels to either solid black or white).</li> <li>- Supports use of a color map to remap Y8 frame buffer contents.</li> <li>- Support for 90, 180, and 270 degree HW-accelerated frame buffer rotation.</li> <li>- Support for panning (y-direction only).</li> <li>- Support for three EPDC driver display update schemes: Snapshot, Queue, and Queue and Merge.</li> <li>- Support for user control of the delay between completing all updates and powering down the EPDC.</li> <li>- Support for dithering.</li> </ul>
GPU	Yes	<p>GC880, GC320.</p> <ul style="list-style-type: none"> <li>• Supports EGL 1.4 for fbdev, X, directFB, Wayland1.3</li> <li>• Supports OpenGL ES1.1</li> <li>• Supports OpenGL ES2.0 (WebGL 1.0.1 compatible on X)</li> <li>• Supports OpenVG1.1</li> <li>• Supports OpenCL1.1</li> <li>• Supports OpenGL2.1</li> </ul>
<b>Multimedia Drivers</b>		
PxP	Yes	Enables PxP driver for EPDC.

## 5 Kernel Boot Parameters

Depending on the booting/usage scenario, you may need different kernel boot parameters.

Table below describes the different boot parameters.

**Table 8. Kernel Boot Parameters**

Kernel Parameters	Description	Typical Values	Used When
-------------------	-------------	----------------	-----------

*Table continues on the next page...*



**Table 8. Kernel Boot Parameters (continued)**

console	Where to output kernel logging by printk.	console=ttymxc0,115200	All cases
ip	Tell kernel how or whether to get IP address.	ip=none ip=dhcp ip=static_ip_address	"ip=dhcp" or "ip=static_ip_address" is mandatory in "boot from TFTP/NFS."
nfsroot	The location of the NFS server/directory.	nfsroot=<ip_address>:<rootfs path>	Used in "boot from tftp/NFS" together with "root=/dev/nfs."
root	The location of the root file system.	root=/dev/nfs or root=/dev/mmcblk0p2	Used in "boot from tftp/NFS" (that is, root=/dev/nfs); Used in "boot from SD" (that is, root=/dev/mmcblk0p2). eMMC will be recognized as mmcblk0 on SABRE-SD board.
rootfstype	Indicates the file system type of the root file system.	rootfstype=ext4	Used in "boot from SD" together with "root=/dev/mmcblk1p2."
rootwait	Wait (indefinitely) for root device to show up.	rootwait	Used when mounting SD root file system.
mem	Tell kernel how much memory can be used.	None or mem=864M	Note: MemTotal-<mem> - <gpu_memory> is reserved.
maxcpus	[SMP] Maximum number of processors that SMP kernel should use.	maxcpus=1	maxcpus=n : n >= 0 limits the kernel to using 'n' processors. n=0 is a special case. It is equivalent to "nosmp".
epdc	Enable EPDC	epdc video=mxcepdcfb:E060SCM,bpp=16	Add to kernel options only if E Ink is the primary display panel. If other display panel is primary, this option may result in a pixel clock conflict and improper display function.
max17135	Configure Maxim17135 EPD PMIC pass number and VCOM voltage.	max17135:pass=[pass_num],vcom=[vcom_uV]	Used when enabling EPDC. pass_num should equal 2 for all IMXEBOOKDC2 cards. vcom_uV, in microvolts, should be equal to the value printed on the cable connector that is attached the E Ink panel being used.
ldb=<x>	Tells the kernel/driver which ldb mode will be used.	1. ldb=sin0/1 2. ldb=spl0/1 3. ldb=du10/1 4. ldb=sep0/1	1. Used when an LVDS use single mode on display port0/1. 2. Used when an LVDS use split mode on display port0/1. 3. Used when two LVDS use dual mode on display port0/1. 4. 4. Used when two LVDS use separate mode on display port0/1.  There are two LVDS channels, LVDS0 and LVDS1, which can transfer video data. These two channels can be used

Table continues on the next page...

**Table 8. Kernel Boot Parameters (continued)**

			<p>as split/dual/single/separate mode. The source for LVDS channel data is the IPUv3 display interfaces, DI0, or DI1. Split mode means display data from DI0 or DI1 will be sent to both channels LVDS0 and LVDS1. Dual mode means display data from DI0 or DI1 will be duplicated on LVDS0 and LVDS1. That is, LVDS0 and LVDS1 will display the same content. Single mode means that only DI0-&gt;LVDS0 or DI1-&gt;LVDS1 will be active at once. Separate mode means that DI0-&gt;LVDS0 and DI1-&gt;LVDS1 may be simultaneously active. It is suggested to use ldb=sep1 mode, which is the default kernel settings to support multi display devices better.</p>
video	<p>Tells kernel/driver which resolution/depth and refresh rate should be used for display port 0 or 1.</p> <p>See the parameter information under Documentation/fb/modedb.txt</p> <p>Tells the kernel/driver which IPU display interface format should be used.</p>	<ol style="list-style-type: none"> <li>1. video=mxcfb0:dev=hdmi, 1920x1080M@60,if=RGB24 video=mxcfb1:dev=ldb,LDBXGA,if=RGB666</li> <li>2. video=mxcfb0:dev=ldb,LDBXGA,if=RGB666 video=mxcfb1:dev=hdmi, 1920x1080M@60,if=RGB24</li> <li>3. video=mxcfb0:dev=lcd,CLAAWVGA,if=RGB656</li> <li>4. video=mxcfb0:dev=mipi_dsi,TRULY-WVGA,if=RGB24</li> <li>5. video=mxcfb0:dev=hdmi, 1920x1080M@60,if=RGB24</li> <li>6. video=mxcfb0:dev=ldb,LDBXGA,if=RGB666 None or ldb=sin0</li> <li>7. video=mxcfb0:dev=ldb,LDBXGA,if=RGB666 ldb=sep1</li> <li>8. video=mxcfb0:dev=hdmi, 1920x1080M@60,if=RGB24 ldb=sep1</li> </ol>	<ol style="list-style-type: none"> <li>1. Used when primarily displaying on hdmi with 1080P60 mode. Secondly displaying on LVDS with XGA mode.</li> <li>2. Used when primarily displaying on LVDS with XGA mode. Secondly displaying on hdmi with 1080P60 mode.</li> <li>3. Used when primary displaying on HDMI with 1080P60 mode.</li> <li>4. Used when primary displaying on the HannStar LVDS0.</li> <li>5. Used when primary displaying on the HannStar LVDS1.</li> <li>6. Used when primary displaying on the TRULY-WVGA MIPI DSI LCD panel.</li> </ol> <p>NOTE: GBR24/RGB565/YUV444 etc represents the display HW interface format. Typical values for certain different display devices are shown below:</p> <p>TVOUT: YUV444</p> <p>VGA: GBR24</p> <p>HDMI&amp;DVI: RGB24</p> <p>CLAA WVGA LCD: RGB565</p> <p>Typical values for dev= are shown below:</p> <p>ldb: LCD interface</p> <p>ldb: LVDS</p> <p>hdmi: HDMI on chip or sii902x</p> <p>dvi: DVI port</p> <p>vga: VGA through TVE</p>

Table continues on the next page...

**Table 8. Kernel Boot Parameters (continued)**

			tve: TVOUT
dmfc	Tells the kernel/driver how to set the IPU DMFC segment size.	None Or dmfc=3	"dmfc=1" means DMFC_HIGH_RESOLUTION_DC. "dmfc=2" means DMFC_HIGH_RESOLUTION_DP. "dmfc=3" means DMFC_HIGH_RESOLUTION_ONLY_DP.  Note: DMFC_HIGH_RESOLUTION_ONLY_DP can only be set by the command line. It is recommended to be set when no IPU connects the two panels. When it is set, each IPU can only connect one panel.
fec.macaddr	Tells the Ethernet Mac address.	fec.macaddr=0x00,0x04,0x9f,0x01,0x30,0x05	Changes the MAC address.

## 6 Known Issues/Limitations for i.MX 6 SABRE-SD

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

Table below lists some key known issues.

**Table 9. Known Issues and Workarounds for i.MX 6 SABRE-SD**

Feature	Category	Description	Resolution/Workaround
SPI NOR boot	Hardware	SPI NOR boot is not supported by Smart Device Board.	Current SD board uses KEY relative PINs as SPI interface. However, this set of PINs are not supported by ROM. Therefore, SPI NOR boot is not supported by Smart Device Board.
ARM	Software	smp_wmb performance is very low.	This is the common side-effect of SMP. No fix plan.
Thermal	Hardware	Temperature Monitor should only be enabled for chips that have undergone proper thermal sensor calibration.	Ensure proper temperature calibration before using the temperature monitor.
CPU hotplug	Software	System hangs after conducting CPU hot plug many times during heavy interrupt.	Known ARM linux limitation. No workaround as of yet.
VPU	Software	Cannot support "-x 1" option for unit test program mxc_vpu_test.out because IPU library is removed.	To avoid this issue, do not use "-x 1", since "-x 1" means enable for IPU library.
IPU	Software	Framebuffer driver and v4l2 output driver share the same fb device. For example, /dev/video16 also uses the /dev/fb0 to do video playback.	fb operations should be banned during video playback on the same fb device.

*Table continues on the next page...*

**Table 9. Known Issues and Workarounds for i.MX 6 SABRE-SD (continued)**

IPU	Hardware	Currently, only supports 4-stripe and 2-stripe split mode. When doing large ratio up-scaling from low resolution frames to high resolution frames, for example, 64x64 to 1920x1080, the requirement cannot be covered by the current split mode solution, that is, each stripe would exceed 1024 pixels for width. Therefore, the video cannot display a full screen.	No.
GPU	Software	Driver recovery mechanism may not work properly sometimes.	No.
PCIe	Hardware/ Software	PCIe doesn't support Hot Plug and Power Management.	No.
Wait mode	Software	The system will not boot up successfully on the pre-production chip such as the i.MX 6Quad TO1.1/ TO1.0 chip.	Freescle decided to drop the pre-production(i.MX 6Quad TO1.1/TO1.0) chip support, please use the production chip.
Memory Management	Software	system will report page allocation failure: order:9, mode:0xd0 when system has no big enough physical continuous memory to allocate.	This maybe caused by the 3.5.7 kernel page reclaiming issue. One workaround for this: echo 1 > /proc/sys/vm/drop_caches before you run the application.
MIPI Display	Software	The MIPI DSI TRULY-WVGA LCD panel(as primary display) cannot display anything after showing linux penguins and Yocto loading bar. But, it is fine to be secondary display	The patch(s) to fix the issue is(are) not included in the release. The root cause of the issue is that X is likely to change framebuffer synchronization signal polarity accidentally.
HDMI	Software	ENGR00290866 cannot set to 1080p@60hz with kernel configuration settings.	Use xrandr to set it after logging in to Yocto rootfs.
GPU2D	Software	The filter blt operation may cause 2D core hang and recovery in certain conditions. "GPU[1] hang, automatic recovery" is displayed.	Eliminate filter blt operation for GPU2D can workaround this issue.
GPU2D	Hardware/ Software	GPU2D may cause system lock-up in very rare conditions.	Disable the 2D acceleration. This issue is from the theory analysis, never be duplicated in any Linux tests.
MMC	Software	Hynix eMMC: times out when Yocto rootfs automatically mounts the RPMB partition.	Rootfs should not automatically mounts RPMB partition which is a secure partition.

**Table 10. Known Issues and Workarounds Specifically for i.MX 6Dual/ 6Quad SABRE-SD**

Feature	Category	Description	Resolution/Workaround
SATA Boot	Hardware	System can't boot from SATA on RevB board.	Remove R7
Boot	Hardware	System can't boot sometimes when it is first powered on RevB board.	Add 2.2Mohm resistor to 24M OSC.

*Table continues on the next page...*

**Table 10. Known Issues and Workarounds Specifically for i.MX 6Dual/6Quad SABRE-SD (continued)**

Suspend/Resume	Hardware/Software	Suspend/Resume failure if board rework "Add 2.2Mohm resistor to 24M OSC".	Remove rework
ARM	Software	CONFIG_SMP should be disabled for i.MX 6Solo chip.	To remove overhead caused by SMP for better performance, CONFIG_SMP is expected to be disabled for single core. Complete support with SMP disabled will be provided with future Linux BSP release.

**Table 11. Known Issues and Workarounds Specifically for i.MX 6Solo/6DualLite SABRE-SD**

Feature	Category	Description	Resolution/Workaround
PMIC	Hardware	i.MX 6DualLite SD board depopulates the resistor R30 which takes away the ability of the processor to turn off the PMIC in hardware.	i.MX 6DualLite TO1.1 will use dumb mode by default.
EPDC	Hardware	The PINs of EPDC are in conflict with other modules.	To enable EPDC, add "epdc" command option into boot command line.
EPDC	Software	Enabling E-Ink Auto-update mode (Device Drivers > Graphics Support > E-Ink Auto-update Mode Support) causes E Ink panel updates to be distorted and flaky.	Disable the E-Ink Auto-update Mode feature in the menuconfig.
EPDC	Hardware	ENGR00178495 3 boards cannot boot with EPDC DC2 attached while they boot normally without DC2 daughter cards. 100%.	This is because the SW3 (KEYPAD_LOCK) switcher on EBOOK DC2 board was switched "ON" which affects the boot bin "EIM_DA7" (BT_CFG1_7). You need to set SW3 in DC2 board to "OFF."
uSDHC	Hardware	SD3.0: U-Boot can't boot with SDR50 and SDR104. This is not an issue with i.MX 6Dual/6Quad.	Fixed in TO1.1.

---

**How to Reach Us:**

**Home Page:**

[freescale.com](http://freescale.com)

**Web Support:**

[freescale.com/support](http://freescale.com/support)

Information in this document is provided solely to enable system and software implementers to use Freescale products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits based on the information in this document.

Freescale reserves the right to make changes without further notice to any products herein. Freescale makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters that may be provided in Freescale data sheets and/or specifications can and do vary in different applications, and actual performance may vary over time. All operating parameters, including "typicals," must be validated for each customer application by customer's technical experts. Freescale does not convey any license under its patent rights nor the rights of others. Freescale sells products pursuant to standard terms and conditions of sale, which can be found at the following address: [freescale.com/SalesTermsandConditions](http://freescale.com/SalesTermsandConditions).

Freescale and the Freescale logo are trademarks of Freescale Semiconductor, Inc., Reg. U.S. Pat. & Tm. Off. All other product or service names are the property of their respective owners. ARM and ARM Cortex-A9 are registered trademarks of ARM Limited.

© 2014 Freescale Semiconductor, Inc.

