

# **i.MX53 START 11.09.01 Linux**

## **Release Notes**

This document contains important information about the package contents, supported features, and known issues/limitations for the i.MX53 START board.

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# 1 Release Contents

## 1.1 Contents

This release consists of the following package files:

- L2.6.35\_11.09.01\_ER\_source.tar.gz
- L2.6.35\_11.09.01\_ER\_images\_MX5X.tar.gz
- L2.6.35\_11.09.01\_ER\_docs.tar.gz

Note: i.MX53 START was previously named as i.MX53 LOCO. The machine ID registered under <http://www.arm.linux.org.uk/developer/machines/> was i.MX53 LOCO. However, there are still references to “LOCO” in the source code and binary files. Any instance of “LOCO” needs to be treated as a reference to i.MX53 START.

There are two kinds of i.MX53 START board: i.MX53 START board with MC34708 PMIC support and i.MX53 START board with DA9053 PMIC support. The same image can run on both boards.

Release version is named as “L<Kernel\_version>\_<yy>.<mm>.<ij>.”

- “<Kernel\_version>”: BSP Kernel version. (For example, “L2.6.35” indicates that this BSP release is based on the kernel version 2.6.35.)
- “<yy>.<mm>.<ij>”: Release date. (For example, “11.01.00” indicates that this BSP was released in January, 2011.)

[Table 1-1](#), [Table 1-2](#), and [Table 1-3](#) list the contents included in each package:

**Table 1-1. L2.6.35\_11.09.01\_ER\_images\_MX5X.tar.gz Content**

File	Description
u-boot-mx53-loco.bin	U-Boot bootloader for the i.MX53 START board.
ulmage	Binary kernel image for the Linux 2.6.35 kernel. The same image can run in all i.MX5 boards.
amd-gpu-x11-bin-mx51_11.09.01-1_armel.deb	Debian package for the GPU driver and the application for X11.
firmware-imx_11.09.01-1_armel.deb	Debian package for the firmware files, which includes VPU and Atheros WiFi.
imx-lib_11.09.01-1_armel.deb	Debian package for imx-lib binary.
imx-test_11.09.01-1_armel.deb	Debian package for the imx unit test binary
kernel_2.6.35.3-imx_11.09.01_armel.deb	Debian package for the Linux kernel image, kernel modules and the header files.
libz160-bin_11.09.01-1_armel.deb	Debian package for the GPU Z160 2D driver.

File	Description
modeps_11.09.01-1_armel.deb	Debianpackage for module dependencies
xserver-xorg-video-imx_11.09.01-1_armel.deb	Debian package for the i.MX accelerated video driver.
udev-fsl-rules_11.09.01-5_armel.deb	Debian package for udev rules

**Table 1-2. L2.6.35\_11.09.01\_ER\_source.tar.gz Content**

File	Description
EULA	Freescale End User License Agreement
Install	Install script for LTIB
ltib.tar.gz	LTIB (Linux Target Image Builder)
package_manifest.txt	Freescale LTIB open source packages
Pkgs	Source and patches for the root file system
pkgs/imx-test-11.09.01.tar.gz	Source code for the unit tests
pkgs/imx-lib-11.09.01.tar.gz	Source code for the libraries
pkgs/linux-2.6.35.3-imx_11.09.01.bz2	Freescale 2.6.35.3-11.09.01 kernel patches
pkgs/u-boot-v2009.08-imx_11.09.01.tar.bz2	i.MX U-Boot patches based on U-Boot version 200908
pkgs/firmware-imx-11.09.01.tar.gz	i.MX firmware packages
pkgs/xserver-xorg-video-imx-11.09.01.tar.gz	Source code of the i.MX accelerated video driver
pkgs/kobs-ng-11.09.01.tar.gz	Source code of kobs-ng package which is used to flash MX53 NAND U-Boot.
pkgs/gcc-4.4.4-glibc-2.11.1-multilib-1.0-1.i386.rpm	FSL Open source optimized toolchain gcc 4.4.4 which enables NEON for ARM cortex-A8.
tftp.zip	A Windows TFTP server program

**Table 1-3. L2.6.35\_11.09.01\_ER\_docs.tar.gz Content**

File	Description
EULA	Freescale End User License Agreement
readme.html	Readme file containing links to additional documentation
doc/mx5	i.MX53 Linux BSP Release Notes, User's Guide, Reference Manual

## 1.2 License

All source code files of the Board Support Package (BSP) are GNU General Public License (GPL) or 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 libz160-bin-11.09.01.tar.gz

Files in package amd-gpu-bin-mx51-11.09.01.tar.gz

## 2 System Requirements

### 2.1 Linux Host Server

See “[ltib\\_build\\_host\\_setup.pdf](#)” for host server setup.

### 2.2 MFG Tool

The `Mfgtools-Rel-11.09.01_ER_MX53_UPDATER.zip` package contains the image down loading tool.

### 2.3 i.MX53 START Components

[Table 2-1](#) lists the hardware items contained in the i.MX53 START package. Read MX53 START Hardware user guide, before using it.

**Table 2-1 Kit Components**

Item	Description
Boards	i.MX53 START board
Display	<ul style="list-style-type: none"><li>• VGA output</li><li>• TVOut</li><li>• CLAA WVGA panel (Optional Board)</li><li>• Seiko WVGA panel (Optional Board)</li><li>• HDMI daughter card (Optional Board)</li></ul>
Cables	<ul style="list-style-type: none"><li>• DB9 M/F RS-232 serial cable</li><li>• USB type A/M to MicroUSB type B/M shielded cable</li><li>• Ethernet straight cable</li></ul>
Data storage	<ul style="list-style-type: none"><li>• SD card</li><li>• MMC/eMMC4.3/eMMC4.4 cards</li><li>• SATA</li></ul>
Power Supply	Dedicated power supply box

## 3 What's New

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

### 3.1 New Features

See `ResolvedEnhancements.html` for the complete list of new features and enhancements since the last release.

Summary of the main features is as follows:

- Enabled i.MX53 START board with MC34708 Rev2.4 support
- Added DDR PIN floating operations in system idle to save the power in idle and audio playback mode
- Added CEA extend revision 1/2 support for EDID
- Fixed the touch screen and I2C failures for DA9053 PMIC
- Improved the capture quality of OV5642 and OV3640
- Aligned U-Boot mmc command with community code
- Fixed the random failure “the kernel stops at “calibration delay loop...” caused by GPT timer stop.
- U-Boot: Switch to use plug-in mode instead of DCD mode

## 3.2 Defect Fixes

See `ResolvedDefects.html`, referenced inside the file `readme.html`, for the list of the defects fixed in this release.

## 4 BSP Supported Features

[Table 4-1](#) describes the features that are supported in this BSP release.

**Table 4-1 Supported Features**

Feature	Supported?	Comments
<b>Kernel</b>		
Kernel	Yes	Kernel version: 2.6.35.3
File System	Yes	EXT2/EXT3/EXT4 are used as the file system in MMC/SD, SATA
<b>Bootloader</b>		
U-Boot	Yes	<ul style="list-style-type: none"> <li>• U-Boot delivery is based on U-Boot version 200908.</li> <li>• Supports Micro SD boot.</li> <li>• Support SD/MMC/eMMC4.4/SATA “Read” and “Write” operations.</li> <li>• Support I2C commands to manipulate DA9053.</li> <li>• Supports FEC and console output.</li> <li>• Supports fuse and clock operations.</li> </ul>
<b>Machine Specific Layer</b>		
ARM Core	Yes	Supports Cortex-A8 (The default CPU frequency of START board is 1GHZ).

Feature	Supported?	Comments
Memory	Yes	1G memory is used. The user/kernel space is split as 2G/2G.
Interrupt	Yes	Supports MXC TZIC module.
Clock	Yes	Control system frequency, clock tree distribution.
Timer (GPT)	Yes	System timer tick support.
GPIO/EDIO	Yes	GPIO is initialized in earlier phase according to hardware design. Note that all GPIO activate/deactivate functions used in the drivers are dummies (see the MSL code for the details).
IOMUX	Yes	Provides the interfaces for IO configuration. IOMUX-V3 version is used.
SPBA	Yes	Provides the interfaces to allow different masters to take or release ownership of a shared peripheral.
SDMA	Yes	SDMA script version is V1.1.0.
<b>Character Device Drivers</b>		
MXC UART	Yes	Console support via UART1.
<b>Graphic Drivers</b>		
Frame Buffer Driver	Yes	MXC Frame buffer driver for IPU V3.
LVDS	Yes	Supports HannStar LVDS panel
VGA	Yes	Support VGA output via TVE module. The following video modes are supported by default: <ul style="list-style-type: none"> <li>• XGA</li> <li>• SXGA</li> </ul> For additional video modes, timing parameters must be computed and the new video mode added to the source code.
TVE	Yes	Support TVOut via the VGA-TV cable. The following video modes are supported: <ul style="list-style-type: none"> <li>• TV-PAL</li> <li>• TV-NTSC</li> <li>• TV-720P60</li> <li>• TV-720P30</li> <li>• TV-1080I60</li> <li>• TV-1080I50</li> <li>• TV-1080P30</li> <li>• TV-1080P25</li> <li>• TV-1080P24</li> </ul>
HDMI	Yes	Supports Sii902x HDMI chip. Supports EDID feature.
WVGA	Yes	Supports CLAA WVGA panel and Seiko WVGA panel.
GPU	Yes	GPU software version: AMD Production Release 1.2. <ul style="list-style-type: none"> <li>• Supports Z430 (3D) and Z160 (2D).</li> <li>• Support s OpenGL ES 2.0 and 1.1, OpenVG 1.1, C2D custom API using Z160</li> <li>• Provides debian packages to support EGL X-Window.</li> </ul>
<b>Multimedia Drivers</b>		
IPU V3 driver	Yes	Provides the interfaces to access IPU V3 modules.
V4L2 Output	Yes	Provides V4L2 implementations. Currently V4L only supports one instance. IPU library located in the imx-lib package can support multiple instances. De-interlace function for split mode (> 1024x1024) is not supported in this version.
VPU	Yes	VPU firmware version: v1.4.41

Feature	Supported?	Comments
		Supports VPU encoder and VPU decoder. For Real Video and DivX3 support information, contact a Freescale representative.
<b>Power Management Drivers</b>		
PMIC	Yes	Supports the DA9053 PMIC via I2C interface. Supports the MC34708 PMIC via I2C interface
Lower Power mode	Yes	Supports stop mode in mem state. Only supports power key and RTC as wakeup resources.
DVFS-Core	Yes	<ul style="list-style-type: none"> <li>• HW DVFS-Core can be used for CPU frequency adjustment.</li> <li>• For 1.2GHZ chip, supports 4 working points (1.2GHZ, 1GHZ, 800MHZ, 400MHZ).</li> <li>• For 1GHZ chip, supports 3 working points (1GHZ, 800MHZ, 400MHZ).</li> </ul>
CPUFreq	Yes	CPUFreq can be used for CPU frequency adjustment.
Bus scaling	Yes	Bus scaling driver can be used for bus frequency adjustment.
<b>Sound Drivers</b>		
S/PDIF Tx	Yes	<ul style="list-style-type: none"> <li>• Supports S/PDIF Transmit to HDMI.</li> <li>• Supports inaccurate 48K sample rate because the OSC is 24MHZ.</li> </ul>
SSI/SGTL500	Yes	<ul style="list-style-type: none"> <li>• Supports the STGL5000 stereo audio codec under ASoC framework.</li> <li>• Supports audio playback and record.</li> </ul>
ASRC	Yes	Support ASRC module for sample rate conversion.
<b>Input Device Drivers</b>		
Touch panel	Yes	Supports P1003 and eGalax capacitive touch screen driver.
USB devices	Yes	Supports USB mouse and USB keypad via USB ports
<b>MTD driver</b>		
SATA	Yes	Supports SATA driver with internal clock.
<b>Networking Drivers</b>		
FEC	Yes	Supports LAN8720 PHY.
<b>USB Drivers</b>		
USB Host	Yes	Supports USB HOST1 and USB OTG host.
USB Device	Yes	Supports USBOTG device mode.
<b>Security Drivers</b>		
Security drivers	Yes	Supports SCC2 and SAHARA.
<b>General drivers</b>		
SRTC	Yes	Supports for the LP domain.
MMC/SD/SDIO	Yes	<ul style="list-style-type: none"> <li>• Supports i.MX eSDHC module with PIO and DMA modes.</li> <li>• Supports eMMC4.4 DDR and SDR mode via SDHC3.</li> </ul>
WatchDog	Yes	Supports Watchdog reset.
I2C	Yes	Supports I2C master. Supports I2C1, and I2C2.
SPI	Yes	Supports SPI master mode.
PWM	Yes	Supports the backlight driver via PWM.
Accelerometer	Yes	Supports MMA8450. It is disabled by default.
WiFi	Yes	Supports AR6003 WiFi card.

## 5 Kernel boot parameters

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

**Table 5-1. Kernel Boot Parameters**

Kernel Parameters	Description	Typical Values	Used When
console	Where to output kernel logging by printk.	console=ttymx0	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/mmcbk0p2	Used in "boot from tftp/NFS" (that is, root=/dev/nfs); Used in "boot from SD" (that is, root=/dev/mmcbk0p2).
rootfstype	Indicates the file system type of the root file system	rootfstype=ext4	Used in "boot from SD" together with "root=/dev/mmcbk0p2."
rootwait	Wait (indefinitely) for root device to show up.	rootwait	Used when mounting SD rootfs.
tve	Enable TVOUT feature.	tve	Used when need enable TVOUT, after enable tve, below video modes will be added into di1 FB mode list:  TV-1080P24: D:1920x1080p-24 TV-1080P25: D:1920x1080p-25 TV-1080P30: D:1920x1080p-30 TV-1080I50: D:1920x1080i-50 TV-1080I60: D:1920x1080i-60 TV-720P30: D:1280x720p-30 TV-720P60: D:1280x720p-60 TV-PAL: D:720x576i-50 TV-NTSC: D:720x480i-60  First column is FB mode's string name.

vga	Enable VGA feature.	vga	<p>Used when need enable VGA output, after enable vga, below video modes will be added into di1 FB mode list:</p> <p>VGA-WSXGA+: D:1680x1050p-60</p> <p>VGA-SXGA: D:1280x1024p-60</p> <p>VGA-XGA: D:1024x768p-60</p> <p>VGA-SVGA: D:800x600p-60</p> <p>First column is FB mode's string name.</p>
hdmi	Enable Sii902x hdmi module.	hdmi	<p>Used when need enable HDMI output, after enable hdmi, the sii902x driver will try to fetch video modes by reading EDID, if succeed, these video modes will be added into di0 FB mode list.</p>
ldb=di<x>	Tells the kernel/driver to enable LDB driver	ldb=di1 or ldb=di0	<p>Used when LVDS panel is connected via LVDS1 port</p> <p>Used when LVDS panel is connected via LVDS0 port</p>
di1_primary	Tells the kernel/driver that DI1 is the primary display	di1_primary	Used when primary display is on DI1 port.
di0_primary	Tells the kernel/driver that DI0 is the primary display	di0_primary	Used when primary display is on the DI0 port.
ddc	Enable common MXC DDC driver. It will try to read EDID info from the I2C bus platform data defined.	ddc	<p>After enable ddc, if EDID reading successful, the video modes will be added to defined di framebuffer modelist.</p>

video	<p>Tell 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=mxcdilfb:GBR24,VGA-XGA dil_primary vga</li> <li>2. video=mxcdi0fb:RGB565,CLAA-WVGA di0_primary</li> <li>3. video=mxcdi0fb:RGB24,SEIKO-WVGA di0_primary</li> <li>4. video=mxcdi0fb:RGB24,1024x768M@60 hdmi di0_primary</li> <li>5. video=mxcdilfb: YUV444, TV-1080P30 dil_primary tve</li> <li>6. video=mxcdi0fb:RGB565,int_clk 800x480M@55 di0_primary</li> <li>7. video=mxcdi0fb:RGB666,XGA di0_primary ldb=di0</li> </ol>	<ol style="list-style-type: none"> <li>1. Used when displaying on VGA with XGA resolution</li> <li>2. Used when displaying on a CLAA WVGA LCD connected to display port 0</li> <li>3. Used when displaying on a Seiko WVGA LCD connected to display port 0</li> <li>4. Used when displaying on a HDMI output devices via HDMI daughter card. The required video mode is 1024x768 at 60 refresh rate. After EDID reading, the nearest video mode will be chosen in EDID video mode list.</li> <li>5. Used when displaying on a 1080P TV for display port 1.</li> <li>6. Display port 0 uses 800x480 CVT timing, pixel clock choose internal clock as clock source. If without int_clk option, display driver will automatically choose the clock source, it will try internal first, if not accurate, then external.</li> <li>7. Used when displaying on the HannStar LVDS via LVDS0</li> </ol> <p>NOTE: GBR24/RGB565/YUV444 etc represent the display HW interface format, typical value for different display devices is like below:</p> <p>TVOUT: YUV444</p> <p>VGA: GBR24</p> <p>HDMI&amp;DVI: RGB24</p> <p>CLAA WVGA LCD: RGB565</p>
dmfc	Tells the kernel/driver how to set IPU DMFC segment size	<p>None</p> <p>Or</p> <p>dmfc=3</p>	<p>"dmfc=1" means DMFC_HIGH_RESOLUTION_DC,</p> <p>"dmfc=2" means DMFC_HIGH_RESOLUTION_DP,</p> <p>"dmfc=3" means DMFC_HIGH_RESOLUTION_ONLY_DP.</p> <p>Note: DMFC_HIGH_RESOLUTION_ONLY_DP can only be set by the command line.</p>
mem	Tell kernel how much memory can be used.	<p>None or</p> <p>mem=864M</p>	Note: 1G -<mem> - <gpu_memory> is reserved for X-Acceleration.

gpu_memory	Tell kernel how much memory is reserved for GPU usage.	None or gpu_memory =128M	Used to indicate the memory size reserved for the GPU.
gpu_nommu	Tell the kernel to disable GPU MMU function. <b>The disable of the MMU is required on this release.</b>	Nor or gpu_nommu	Used to disable GPU MMU function. To enable GPU MMU function, DMA zone requirement is something different.

## 6 Known Issues/Limitations

Read through all hardware related reference material and ensure the necessary hardware modifications have been made before using the software. [Table 6-1](#) lists some key known issues.

**Table 6-1 Known Issues and Workarounds**

Features	Category	Description	Resolution/Workaround
Display	Configuration	Display automatic blank functionality is enabled by default. So the display will power off automatically when the time is expired.	To disable LCD automatic blank functionality, enter the command: <code>echo -e "\033[9;0]" &gt; /dev/tty0</code>  When the display is off, enter the following command to power on the display: <code>echo 0 &gt; /sys/class/graphics/fb0/blank</code>
Video	Configuration	When playing the video for a long time, allocation of contiguous memory may fail (memory fragmentation).	To play video when the system memory is low, run the command: <code>echo 1 &gt; /proc/sys/vm/lowmem_reserve_ratio</code> It protects the DMA zone and avoids memory allocation errors.
Video	Hardware	Mosaic may be observed when playing video under heavy loading conditions.	The temporary workaround is to increase VCC voltage as 1.35V. The following u-boot commands can achieve it: <code>i2c mw 0x48 0x2f 0x62</code> <code>i2c mw 0x48 0x3c 0x62</code>  Or reduce peripher clock just like the below: <code>clk periph 380</code>
Video	BSP	ENGR151391 (1080P playback: Allocation of the Frame Buffers Failed for some	The workaround is to add "gpu_nommu" command option in launch command line. Or drop

Features	Category	Description	Resolution/Workaround
		H.264 stream)	ENGR00143019 patches. Or increase DMA zone size by changing CONFIG_DMA_ZONE_SIZE to 128M.
SATA	Hardware	SATA with internal clock cannot boot.	Ensure the fuse "SATA_ALT_CLK_REF" is blown. The following u-boot command can blow SATA internal boot fuse: iim blow 4 3 4
SATA Temperature Sensor	Hardware/BSP	To run the command "cat /sys/class/hwmon/hwmon1/device/temp1_input" on some START boards, the following error is reported: Wait for CR ACK error! imx-ahci-hwmon imx-ahci-hwmon: Read/Write REG error, 0x0!	The workaround is to add more delays in polling operation. See the patch "0001-Fix-the-ack-error-when-read-systems-temperature-on-.patch"
ASRC	BSP	The ASRC unit test program in 11.09.01 can not work well.	Need to revert one patch for 2.6.38 kernel in imx-test package. Please refer to "
SRTC	Hardware	The alarm interrupt fails to wake up the system.	Read HW guide for the rework.
Seiko WVGA	Hardware	Seiko WVGA panel does not work well on REV B boards.	Read HW guide for the rework.
Touch Screen	Hardware	DA9053 touch screen does not work well.	Check the hardware and ensure TSIREF_GPIO7 is connected to LDO8.
USB	Hardware	The Lower USB Host Jack and the Micro USB Device Jack are cross connected.	The user can plug one cable into either jack, but cannot plug cables into both jacks at the same time.
Power	U-Boot	If staying in U-Boot console, the chip becomes hot.	This is because all clocks are enabled in U-boot. So the power in U-boot is higher. But the clocks are disabled in kernel initialization codes. To disable unused clocks in U-boot, the following codes under board/freescale/mx53_loco/lowlevel_init.S can be modified according to the actual use case: can be modified according to the actual use case:

Features	Category	Description	Resolution/Workaround
			<pre> /* Restore the default values in the Gate registers */ ldr r1, =0xFFFFFFFF str r1, [r0, #CLKCTL_CCGR0] str r1, [r0, #CLKCTL_CCGR1] ... </pre>
LTIB Build	LTIB	<p>When you install LTIB host packages and build elftosb, the following error is reported</p> <pre> /usr/bin/ld: ElftosbAST.o: in function elftosb::BinaryOpExprASTNode::reduce(elftosb::EvalContext&amp;):/opt/freescale/ltib/usr/src/rpm/BUILD/elftosb-10.10.00/elftosb2/ElftosbAST.cpp:758: error: undefined reference to 'powf' </pre>	<p>Modify</p> <pre> elftosb-10.10.00/makefile.rules and change as the following: -LIBS = -lstdc++ +LIBS = -lstdc++ -lm </pre>
ARMV7	Hardware	<p>ENGcm11413 (Data abort when AXI access with BL&gt;8 is made):</p> <p>If an 8-bits NEON load to strongly ordered/device memory, and if the access size is more than 8 bytes, the AXI bus will use the burst (burst len more than 8, burst size is 1 byte).</p> <p>MX53 M4IF just supports the burst length up to 8.if burst length is larger than 8, MX53 reports the data abort.</p>	<p>The user should avoid <code>pgprot_noncached</code> to be used in <code>xxx_mmap</code> for DDR memory. The user should use <code>pgprot_writecombine</code> instead of <code>pgprot_noncached</code> to map the DDR memory to the user space.</p> <p>If the <code>pgprot_writecombine</code> is used for mapping a DDR area and DMA is enabled for this area, the user must do DSB(Data Synchronization Barrier) by using <code>dsb()</code> function for drawing the write buffer, before the DMA starting read from this area.</p>
NEON	Software	NEON should not be used at all for Linux kernel modules	Follow this rule.
Hannstar touch	Software	Hannstar touch don't work on GNOME	<p>The multi-touch function is not supported in GNOME. To use this touch in GNOME the single touch options needs to be enabled. With the following code changes:</p> <pre> --- a/drivers/input/touchscreen/egalax_ts.c +++ b/drivers/input/touchscreen/egalax_ts.c @@ -28,7 +28,7 @@ - auto idle mode support - early suspend support for android */ </pre>

Features	Category	Description	Resolution/Workaround
			<pre>- +#define FORCE_SINGLE_POINTER_SUPPORT #include &lt;linux/module.h&gt; #include &lt;linux/init.h&gt; #include &lt;linux/i2c.h&gt;</pre>
toolchain	toolchain	<p>When writing assembly code to use neon/vfpv3 fpu and assembler it by binutils, vcvtr instruction will encoder to vcvtr wrongly, this leading to performance decrease a lot.</p> <p>For example, assembly code <code>test.s</code> with content as:</p> <pre>.text                                 .globl  t est                                 .align  2 test:                                 vcvtr.s32. f32    s1, s1</pre> <p>Assemble with command:</p> <pre>arm-fsl-linux-gnueabi-as -march=armv7-a -mfpv=neon -mfloat-abi=softfp test.s -o test.o</pre> <p>The instruction:</p> <pre>                                vcvtr.s32.f32    s1, s1</pre> <p>is wrongly encoded to:</p> <pre>                                vcvtr.s32 .f32    s1, s1</pre>	Avoid using vcvtr instructions.

## 7 Tips for MC34708 START board

Features	Descriptions	Setting on MC34708 START board
HW Reset	<p>MX53 MC34708 START board supports the HW reset function by two options:</p> <ul style="list-style-type: none"> <li>- To enable a global reset the GLBRST pin (Reset Key) needs to be pulled low for greater than GLBRSTTMR[1:0] seconds and then pulled back high.</li> <li>- Configure PWRONx pins and enable PWRONxRSTEN and RESTARTEN bits to generate a system reset.</li> </ul>	<p>Current default reset function in MC34708 START board is enabled by a global reset through pressing reset key 4s until the LED is changed from blue clock to red color, then blue color again.</p> <p>However HW reset function is not stable if U-boot applies plug-in method. By switching back to use DCD method (See the patch 0001-ENGR00155891-mx53-mc34708-QS-restore-to-use-DC D-mode.patch), the reset function is much stable. The root cause is under investigation.</p>
Reboot	<p>MX53 Watchdog output PIN is connected to MC34708 WDI signal. To ensure SW reboot stable, recommend to enable MC34708 WDIRESET bit so that MC34708 can go to Cold Start without passing through off mode.</p>	<p>Please refer to kernel patch "0001-ENGR00155891-mx53_loco-enable-mc34708-s-WDI-function.patch"</p>
Poweroff	<p>MC34708 can support poweroff function by setting PWRONxRSTEN bits as 1. When enabled, a 4 second long press on the power button will cause the device to go to the Off mode,</p>	<p>HW poweroff function is disabled by default. This is because 4s cannot meet the definition of power key. Recommend to implement poweroff function through the software.</p>

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