Linux support package (LSP) v3.2.3 for SPEAr eMPU family

Introduction

This document provides a summary for the contents of a specific Linux support package (LSP) software version for the SPEAr embedded eMPU family.

Contents

List of tables

1 Release information

Table 1.   Release information

LSP version	3.2.3
Delivery date	February 21, 2012
Status	Validated
Reference U-Boot	v2010.03
Reference Linux kernel	2.6.37
Reference GCC	4.6.2 20110813
Reference Binutils	2.20.51.20100809
Reference GDB debugger	6.8. 59
Reference GLIBC libraries	2.10
X-Loader repository	G://git.stlinux.com/spear/xloader.git
U-Boot repository	git://git.stlinux.com/spear/u-boot.git
Linux repository	git://git.stlinux.com/spear/linux-2.6.git
Git tag	lsp-3.2.3
PC OS supported	Fedora 9

2 Target platforms

The following table reports the hardware platforms and the relevant configurations supported by this LSP version. Each target may consist of one or more physical boards (kit).

Y: supported   N: not supported   -: not applicable

Table 2.   Target platforms

Target	Boards	Supported	Configuration
SPEAr300	EVALSPEAR300	Y	CPUs @ 333 MHz Bus @ 166 MHz DDR3 @ 333 MHz
SPEAr310	EVALSPEAR310	Y	CPUs @ 333 MHz Bus @ 166 MHz DDR3 @ 333 MHz
SPEAR320S-PLC	EVALSP320SCPU standalone or with EVALSP320SPLC appl.board	Y	CPUs @ 333 MHz Bus @ 166 MHz DDR3 @ 333 MHz
SPEAR320S-HMI	EVALSP320SCPU + EVALSP320SHMI prototype board	Y	CPUs @ 333 MHz Bus @ 166 MHz DDR3 @ 333 MHz
SPEAr600	EVALSPEAR600	Y	CPUs @ 333 MHz Bus @ 166 MHz DDR3 @ 333 MHz
SPEAr1310-A with common expansion	EVALSP1300CPU R3 + EVALSP1310EXP	Y	CPUs @ 500 MHz Bus @ 166 MHz DDR3 @ 533 MHz
SPEAr1340	EVALSP1340CPU R1/R2.x	Y	CPUs @ 600 MHz Bus @ 166 MHz DDR3 @ 533 MHz

3 Features

The following table reports the features supported by this LSP version that have a general scope, not related to specific hardware IPs or external peripherals.

Table 3. Features supported in LSP 3.2.3

Category component	Description	Targets	Remarks
Multiprocessing	Symmetric multiprocessing (SMP) in Linux kernel for dual core platforms	SPEAr1310-A, SPEAr1340	NA
Power Management	CPU Frequency	All	
	Standby	All	For Spear3xx/Spear6xx this is with echo mem > /sys/power/state. For others it is echo standby > /sys/power/state.
	Suspend to RAM	SPEAr1310-A, Spear1340	NA
	Hibernation	SPEAr1310-A, Spear1340	Hibernation is now validated
Sound	Support of ALSA framework	SPEAr1310-A, SPEAr1340	NA
Video	V4L2 framework	SPEAr1340	NA
Camera	V4L2 framework	SPEAr1340	NA
Flashing Tool	USB based Flashing tool	All	NA

3.1 Linux device drivers for SOC IPs

The following table reports the device drivers supported by this LSP version for functionality provided through software concerned with internal hardware IPs.

Y: supported   N: not supported   -: not applicable

Table 4. Linux device drivers for SOC IPs

Hardware component	Description	SPEAr 300	SPEAr 310	SPEAr 320S	SPEAr 600	SPEAr 1310-A test chip	SPEAr 1340	Remarks
ADC	A/D converter	Y	Y	Y	Y	Y	Y	
CAN	CAN ports	-	-	Y	-	Y	-	Supported with prototype EVALSP320SHMI board

Table 4.   Linux device drivers for SOC IPs (continued)

Hardware component	Description	SPEAr 300	SPEAr 310	SPEAr 320S	SPEAr 600	SPEAr 1310-A test chip	SPEAr 1340	Remarks
CLCD	CLCD controller	Y	-	Y	Y	N	Y	Supported with prototype EVALSP320SHMI board
CEC	CEC controller	-	-	-	-	-	Y	Tested in loopback only
Camera	Camera controller	-	-	-	-	-	Y	Tested with only one sensor
DMAC	DMA controller	Y	Y	Y	Y	Y	Y	
EMI Flash memory PNOR	EMI controller	-	Y	Y	-	-	-	PNOR is attached on EMI interface
Ethernet (MAC)	LAN	Y	Y	Y	Y	Y	Y	
Ethernet SMII	LAN	-	Y	N	-	-	-	
E1/ TDM/HDLC/RS 485	HDLC controller	-	Y	-	-	Y	-	
Flash memory NAND	FSMC controller	Y	Y	Y	Y	Y	Y	
Flash memory SNOR	SMI controller	Y	Y	Y	Y	Y	Y	
GPIO / XGPIO	Standard and extended GPIOs	Y	Y	Y	Y	Y	Y	
GPT	General purpose timers	Y	Y	Y	Y	Y	Y	
GPU (MALI 200)	2D/3D graphics	-	-	-	-	-	Y	
Hardware video decoder		-	-	-	-	-	Y	
I2C	I2C controller	Y	Y	Y	Y	Y	Y	Slave mode not supported
I2S	I2S controller for audio	N	-	-	-	-	Y	Tested with STA529 codec
JPEG	JPEG codec	Y	Y	Y	Y	Y	-	
Keypad	Keypad controller	Y	-	-	-	N	N	
MCIF (SD/MMC)	Memory card I/F	Y	-	Y	N	Y	Y	

Table 4.   Linux device drivers for SOC IPs (continued)

Hardware component	Description	SPEAr 300	SPEAr 310	SPEAr 320S	SPEAr 600	SPEAr 1310-A test chip	SPEAr 1340	Remarks
PCIe	PCIe controller	-	-	-	-	Y	Y	Slave mode not supported
PWM	PWM controller	-	-	Y	-	-	Y	Not validated
RTC	Realtime clock	Y	Y	Y	Y	Y	Y	
SATA	SATA controller	-	-	-	-	-	Y	
Security Coprocessor (C3)	Crypto accelerator	Y	Y	Y	-	N	Y	
SPP	Legacy parallel port	-	-	Y	-	-	-	Not validated
SSP	SPI port	Y	Y	Y	Y	Y	Y	Slave mode not supported
SPDIF Out	SPDIF playback controller for audio	-	-	-	-	-	Y	Tested with HDMI tx on TV
SPDIF In	SPDIF recorder for audio	-	-	-	-	-	Y	Tested with loopback
Temperature sensor		-	-	-	-	Y	Y	
Touchscreen		Y	-	-	Y	N	Y	
UART	Asynchronous serial port	Y	Y	Y	Y	Y	Y	
USB DEVICE	USB device controller	Y	Y	Y	Y	Y	-	
USB HOST	USB host controller	Y	Y	Y	Y	Y	Y	
USB OTG	USB OTG controller	-	-	-	-	-	Y	
WATCHDOG	Watchdog timer	Y	Y	Y	Y	Y	Y	
Video In	Video In controller	-	-	-	-	-	N	

3.2 Linux device drivers for external peripherals

Table 5. **Linux device drivers for external peripherals**

Hardware component	Description	SPEAr 300	SPEAr 310	SPEAr 320S	SPEAr 600	SPEAr 1310-A test chip	SPEAr 1340	Remarks
Accelerometer	Motion sensor	-	-	-	-	-	Y	
Gyroscope	Gyroscope controllers	-	-	-	-	-	Y	
HDMI TX	HDMI TX controller	-	-	-	-	-	Y	Tested with HDMI Tx on TV through HDMI plug outside LSP
Magnetometer	Motion sensor	-	-	-	-	-	Y	

4   Summary of main changes

This LSP version includes the following main changes:

● SOC/board support added/removed

– New SPEAr320S product added (in SPEAr320 backward compatibility mode).
Support added for HMI board v3.0 and PLC board.

– Support for SPEAr1300 and SPEAr900 test chips now dropped.

● XLoader

– Added support of SPEAr320S

– Change in SPEAr13xx leveling algorithm

– Changed SPEAr3xx port priority

– Changed DDR pad registration configuration

– Changed MPMC configuration for DUAL DDR for SPEAr3xx

● U-Boot

– Added support of SPEAr320S

– Added support to list devices in IMLS in NAND

– Updated Flash probing method

● Linux

– Special customized bootargs panel is replaced by generic standard argument
video to set CLCD resolution during boot. Refer to *linux-
2.6/Documentation/kernel-parameters.txt* for further details.

– CLCD can now be programmed to any valid resolution supported by CLCD
controller. It looks for the mode from the platform first, then from generic modedb
present in drivers/video/modedb.c.

– On boot and thereafter on hotplug events, HDMI reads display EDID and sets
CLCD resolution accordingly. For example, CLCD on boot chooses platform
supplied mode and displays logo, but when HDMI is connected it overrides with its
own best supported resolution. This may disturb the logo if 1080p is not passed
from platform or from video bootargs.

– SPDIF-IN is part of the release which is tested against SPDIF-OUT loopback

– Magnetometer and accelerometer support added

– I2S, SPDIF-OUT and SPDIF-IN support power management and hibernation
callbacks

– Mute control added to SPDIF and ADC gain to I2S record feature

– Video-in support. This is tested with loopback board with CLCD output looped
back to video in IP.

– Camera supports 2 Mega pixel resolution, suspend/resume and crop
implementations

– Wake up sources extended to RTC, GPIO, ethernet and OTG USB device (earlier
it was only GPIO) on SPEAr1340

– Hibernation can be performed on MMC also now. Requires enabling
MMC_UNSAFE_RESUME through menuconfig.

– Added support for MALI GPU and video decoder. These features, if needed, must be explicitly enabled using the Linux *menuconfig* tool before rebuilding the kernel source tree.

– I2C bus recovery hook added in SPEAr1340

– Most of the drivers now support hibernation

Note: 1 *For detailed changes, use following Git commands*

git diff lsp-3.2.3..lsp-3.2.2: reports differences in each file with respect to earlier release

git log lsp-3.2.3: log message for lsp-3.2.3 up to now

2 *Major board related changes*

For power management following changes should be done

● EVALSP1300CPU (board rev. 2 and 3), EVALSP1340CPU (board Rev.1) DDR specific changes (control of reset and clock signal through GPIO) for wake up from lower power state to normal power state

Major EVALSP1340CPU (board rev.2.1) changes with respect to rev.1

● PCI: Instead of PCI, SATA is supported by default. Board changes required to enable PCI.

One camera sensor mounted over board

VGA on board support

Power management specific changes incorporated on board

5 Bugs closed in LSP 3.2.3

Table 6. Bugs closed in LSP 3.2.3

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Camera	For some IOCTLs, invalid options also return success	If invalid buf_type field is set in struct v4l2_cropcap for ioctl VIDIOC_CROPCAP, ioctl returns success. instead of-1. Similarly Video_G_CROP does not return EINVAL in case of unsupported bug types Video_G_CROP, it returns success even if it fails.	Minor	Spear1340	Issue in case of erroneous input	150432
Camera	IOCTL ENUM_FMT gives wrong format	IOCTL ENUM_FMT gives wrong format for index=4. Empty string is returned by driver.	Normal	Spear1340		150722
Camera	Power Management (suspend, standby, hibernation) not supported	Camera does not support any of lower power state	Plus	SPEAr1340		156041
Ethernet	On MTU 9000: Cannot take TCP Rx performance. UDP Rx performance is zero.		Plus	SPEAr310, SPEAr1310-A	NA	142796
Ethernet	Ethernet not stable while moving to low power state	Ethernet link goes down when putting system in low power state and then waking it up	Normal	SPEAr1340		150075
Gyroscope	Driver does not provide any provision to select different power modes from user space	Gyroscope supports multiple power modes to put IP in lower modes but there is no method to modify it from user space.	Minor	SPEAr1340		120329
HDMI	Audio does not work when resolution is different from default resolution of TV.	Selecting resolution other than default resolution of TV (selecting default panel) displays image on TV but no audio is heard.	Minor	SPEAr1340	Setting proper resolution solves this	149748
HDMI	Random flickering on TV connected on HDMI	TV screen flickers randomly if a media is played using mplayer. Frequency programmed for CLCD needs to be tuned further.	Normal	SPEAr1340		150231

Table 6.   **Bugs closed in LSP 3.2.3 (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
I2C	VS6725 camera sensor register access fails when I2C.0 controller is used in FAST mode		Normal	SPEAr1340	Changing speed to standard works	149546
I2s	No audio in left speaker if pb=hdmi_tx is set in boot arguments		Normal	SPEAr1340	Wrong configuration of HDMI. HDMI default audio SPDIF works fine in this case	149944
NAND	Mounting of JFFS2 file system fails	Following errors are thrown jffs2_scan_eraseblock(): Magic bitmask 0x1985 not found at 0x00000024: 0x2524 id Empty flash at 0x0001bffc ends at 0x0001c000	Minor	SPEAr300, SPEAr310, SPEAr600, SPEAr1310-A	Error messages are thrown but file system works properly	110833
NAND	NAND present in EVALSP1340CPU R2.x board does not work properly. Driver has to handle larger size NAND properly.	Read and write to NAND fails with EVALSP1340CPU R2.x board	Plus	SPEAr1340		152441, 152444
OTG	Moving to lower power state fails if OTG is enabled	OTG is not enabled in default image. Enabling OTG and then putting system in lower power state fails.	Plus	Spear1340		150483
PCIE	System does not resume from suspend to RAM through GPIO wake if PCIE card is plugged (tested with PCIE to SATA and PCIE to USB)		Plus	Spear1340		151777
PCIE	MSI interrupts not working		Medium	SPEAR1310-A SPEAr1340		112969

Table 6. **Bugs closed in LSP 3.2.3 (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
PCIE	LSPCI command reported wrong device name	LS PCIe command reports pci device name as unknown device.	Minor	SPEAr1340, SPEAr1310-A	Device works even if it's not recognized.	113040
Power Management: Standby	Board does not wake after standby on lower frequency range.	On stressing system with periodic governor, changes in parallel with standby resume. Sometimes the system does not wake when CPU is at lower frequency.	Minor	SPEAr1340	NA	150184
Power Management: Standby	USB wake up fails		Plus	SPEAr300, SPEAr310 SPEAr320S, SPEAr600	Other wake up source like Ethernet, GPIO, RTC can be used	150443
Power Management: Standby	On stress system standby resume sometimes crashes or gives error	Kernel crashes or gives error messages on stressing system. Test comprised of parallel, very long tests on multiple IP's, and continuous change in CPU frequency through scripts and continuous wake up and standby of system through scripts	Minor	SPEAr1340, SPEAr1310-A	Fails on high stress but individual tests pass	150466

Table 6. **Bugs closed in LSP 3.2.3 (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Power Management: Suspend to RAM	Sometimes kernel crashes on wake up from suspend to RAM through GPIO		Plus	SPEAr 1310-A	Open issue with Linux kernel. On wake up from power state new MMC node is created and ongoing transfer fails. For such cases, kernel has special boot time config parameter marked CONFIG_MMC_UNSAFE_RESUME	151716
Power Management: Hibernation	I2S fails to resume from hibernation	If audio was played on I2S before putting system into hibernation, audio does not play itself after wake up. Linux kernel reports error underrun (at least 6031.581 ms)	Normal	SPEAr 1340	Music can be replayed	151717
Power Management: Hibernation / suspend to RAM / Standby	Resume from any power save state fails if transfer was ongoing on SATA hard disk from NFS before going to power save state	If a data transfer was ongoing from NFS to SATA hard disk, wake up Linux kernel crashes. Transfer between two memory locations of SATA hard disk is not an issue.	Plus	SPEAr 1340 SPEAr 1310-A		150634
SPDIF	Control interface not supported	SPDIF should export control interface, used for control volume, mute and so on	Plus	SPEAr 1340	Affects mute from software	149876
SPDIF	Audio not working after wake up from power save modes	If system is put in power save mode while audio was playing then audio does not resume after wake up. Following errors are thrown `soc-audio: resume work item may be lost aplay: pcm_write:1528: write error: Input/output error`	Plus	SPEAr 1340	Replay audio after resume	149995

Table 6.   Bugs closed in LSP 3.2.3 (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
USB Device		Loopback tests fail if the configuration is switched to loopback from source sink.	Minor	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A,	Device with single configuration works properly	73995
UBOOT	MACB interface support is not available.	SMII support is missing at U-Boot	Minor	SPEAr320S, SPEAr310	Other interfaces are available	124322, 97176

Doc ID 022940 Rev 2

6 Known issues

The following table reports known issues related to this LSP version.

Table 7. List of known issues

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Accelerometer	Input device events are not being generated	Accelerometer and Magnetometer data can be read properly through device attributes. But if we read the data from an input framework based-application, events are not getting generated. Observations: – Magnetometer: events are generated once and data is received once for (x,y,z) axis – Accelerometer: No events are generated and so data is not read – Gyroscope: Same application is working fine to read gyroscope data	Normal	SP1340		158086
ADC	Continuous mode not working	While reading ADC channel with continuous mode following error occurs: `Error in reading return value: -1 Errno set to 11(EAGAIN)`	Plus	SPEAr300		7819

Table 7. List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Camera	When iomethod is selected, user pointer green line displays.	When iomethod is used, user pointer captures from the camera the green line that is seen at the start of every frame. One extra frame is also captured for this iomethod. When using mmap method, the exact number of frames is captured, with no green line. Both methods are verified using mplayer to display captured data.	Normal	SPEAr1340		156391
	Only one pixel format is supported. Others are not working	When the camera application is used to capture data for different pixel formats (such as V4L2_PIX_FMT_YUYV V4L2_PIX_FMT_RGB565 V4L2_PIX_FMT_RGB24 V4L2_PIX_FMT_UYVY), when the same captured data is played after the capture, with respective captured format, the display is not good. Using mplayer captured data, display is only good for yuy2 format.	Plus	SPEAr1340		156496
	Add interlaced frame support for CAMIF	This is related to supporting interlaced fields in CAMIF. Presently CAMIF support only progressive mode in CAMIF.	Normal	SPEAr1340		156723

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
CAN	Issue in multiple frame transmission	– During transmit, program only two CAN objects for Tx. Program 3rd CAN object on receiving TX_OK of 1st Tx CAN object. – Due to a hardware bug in the SPEAr1310-A CAN receive logic, two Rx objects need to be programmed for the same IDENTIFIER to receive a single Rx frame. That is, if CAN frame needs to be received with ID 0, two Rx objects must be programmed for ID 0.	Plus	SPEAr1310-A, SPEAr320S	Driver includes workaround, which fails randomly	81064
	S320S_CPU: CAN skb buffer full issue	While testing CAN for multiple frame transmission at 5 KBPS, sometimes the skb buffer is full and the particular frame transmission gets delayed. This is observed when multiple frame transmission is done in multiple loops.	Normal	SPEAr 320S		155976
	S1310-A: CAN - support for CAN not added	No CAN support for S1310-A platform on LSP-3.2.3. During kernel bootup it displays `missing platform data, probe failed`	Normal	SPEAr 1310-A		158702
CEC	CEC not able to communicate with external device	CEC unable to communicate with external devices.Only tested in loop-back case.	Plus	SPEAr 1340		159097
Ethernet	NFS server goes down when stressing NFS@10 full [mailto:NFS@10full] or 10 half on SMII2	TCP-Tx performance is low at 10 full/half for SMII-2 which is probably causing NFS to go down while running tests on SMII2.	Minor	SPEAr 310		90395
Ethernet	FTP not working on SMII1,2,3,4 for 10/half, 10/full [SPEAr310]	FTP operation fail for configuration 10/full, 10/half on all SMII interface of EVALSPEAR310 board. Only ping command works.	Minor	SPEAr 310		00942

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID

Ethernet	Configuring unused SMII results in junk messages	Configuring the SMII0 which is not connected via ethernet cable results in junk messages. Configuration is done using the ethtool. See the log below:
		`# ./ethtool.dat -s eth0 autoneg off duplex full speed 100 #`
		`./ethtool.dat eth0`
		`# # # # Trying 100/HALF Trying 10/FULL Trying 10/HALF Trying 10/HALF`
			Minor	SPEAr 310		02208

Ethernet	Multicast support not available in MII	Multicast working for SMII driver but not working for MII (synopsys) driver if allmulti not set using ifconfig. Does not work in MII as hash table support for multicast is not available in MII driver.	Normal	SPEAr 300, SPEAr 600		96710
Ethernet	Ethernet performance for 1000/full is very low	We get much less performance on 1000/full configuration using netperf. Performance results are given below: – For Spear1310-A, Spear1340 TCP Tx Perf TCP RX perf 1000/FULL 200.71 Mbps 345.65 Mbps – UDP Tx Perf UDP Rx perf 1000/full 301.04 Mbps 799.64 Mbps – For Spear600: TCP-Tx - 72.47 TCP-Rx - 57.17 – UDP-Tx - 211.42 UDP-Rx - 3.53	Plus	SPEAr1340 SPEAr1310-A SPEAr600		102682

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Ethernet	TX performance test for MTU 9000 results in error	Ping fails at 9000 MTU from SoC to PC. However we can ping form PC to SoC. This is true at all speeds (1000/100/10). At 1000-F unable to take TCP-Tx performance (hangs and need to press control c). At speeds below 1000 we can take TCP Tx/Rx performances. (ping will still fail) UDP-Rx performance for all speed/duplex settings in zero. Listing out performance at 9000 MTU to make things clearer. Tx Rx 1000-F TCP ^C 650.21 UDP 775.44 0 100-F TCP 99.13 99.10 UDP 100.13 0 100-H TCP 91.36 96.58 UDP 100.12 0 10-F TCP 9.86 9.9 UDP 10.71 0 10-H TCP 9.58 9.46 UDP 10.71 0	Normal	SPEAr 1310-A	Supported only up to 8192	111097
Ethernet	Unable to set the MTU size if interface is up.	Steps followed are: ifconfig eth0 mtu 1000 – Result: eth0: must be stopped to change its MTU SIOCSIFMTU: Device or resource busy – Expected result: 1.Type ifconfig 2.MTU field should be set to 1000. It is taking only 1500.	Normal	SPEAr300, SPEAr310, SPEAr320S SPEAr600, SPEAr1310-A, SPEAr1340		115905

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Ethernet	NFS going up and down under stress	NFS is going up and down while running stress. Following tests were executed concurrently 1) Two instances of memtester (64 MB each) executing 100 loops 2) Infinite DMA memory to memory copy on all 16 channels. Data compared with that copied 3) One instance of netperf/netserv with netserver running on EVALSP1300CPU R3 and netperf on Linux machine 4) Two instances of netperf/netserv executing on EVALSP1300CPU R3 in loopback mode 5) Continuous display on CLCD with pattern continuously changing 6) Continuos copy of large file from ethernet to USB pen drive attached on one of USB host ports (alternate copy in both directions) 7) Continuous copy of large file from ethernet to USB pen drive attached on PCI to USB host converter on one of PCI host port (alternate copy in both directions)	Plus	SPEAr 1310-A		123761

Table 7. **List of known issues** (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Ethernet	SPEAr1310-A ethernet linkup fails for autoneg off on host side	– Ethernet link up fails if host side autoneg is set to off. – If board boots with autoneg on, on host side, then autoneg is set to on, ethernet links down again. – With autoneg on at host side, no such issue is found. Setting autoneg off on host side (before or after booting the board) leads to ethernet link down. This is true for EVALSP1300CPU R3 + EVALSP1310EXP and EVALSP1340CPU R1/R2.x.	Normal	SPEAr1340, SPEAr1310-A		150232
Ethernet	Random failures of NFS at multiple boot	Ethernet sometimes fails at multiple reboots	Minor	SPEAr 1340	NA	152249
Ethernet	SMII interfaces not working	– S310. Only 2 SMII out of four work (SMII2 & SMII3 on some boards, SMII1 and SMII2 on others) but SMII4 is not working. Seems to be hardware issue as link LED is not glowing. – S1310-A. 2 SMII and 1 RMII interface. Only SMII interfaces are working. RMII does not work on any board	Normal	SPEAr 310, SPEAr 1310-A		146315
Ethernet	Ethernet link down on setting link parameter on EVALSP1340CPU R1/R2.x	Setting any of the Ethernet link parameters (speed, duplex, autoneg) causes the link down	Normal	SPEAr 1340	Can only be reproduced with specific PCs	148936
Ethernet	S320S: performance issue and MTU size issue	Following issues on performance on eth2 of S320S. – Performance taken only at 100-F & 100-H – Cannot change the MTU sizes. – TCP performance at Tx with 100-F/H is too low at about 10.84	Normal	SPEAr 320S		154305

Table 7. **List of known issues (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
E1	Not working		Plus	SPEAr 1310-A	NA	119237
FSMC	S1310-A: PNOR not detected	PNOR not detected on 1310-A. On flashing the U-Boot built for PNOR and connecting the EVALSP1310EXP (on which PNOR chip is present) dmesg shows: `physmap platform flash device: 04000000 at 7c000000 physmap-flash physmap-flash: map_probe failed`	Normal	SPEAr 1310-A		158778
HDMI	With some resolutions set on CLCD, no image is displayed on TV connected to HDMI	Observed with resolution of 480 X 272	Normal	SPEAr 1340	Setting proper resolution solves this	149878
HDMI	HDMI TX - Interrupts not always received	Sometimes interrupts are not received from HDMI device. This results in no display on HDMI device.	Plus	SPEAr 1340		149881
I2C	I2C designware timeout error	I2C timeout occurs with some I2C devices like gyroscope. This can occur with other devices too. This error continues in Linux boot log if board is rebooted again.	Plus	SPEAr 1310-A, SPEAr 1340	NA	130517
I2C	Input event handler messages in kernel bootlog	Following messages from input event handler are noticed for all the input devices (camera, gyroscope, accelerometer, magnetometer, sta529…) available on EVALSP1340CPU R1/R2.x. For magnetometer: evbug.c:Connected device:input5 (magnetometer at unknown).	Normal	SPEAr 1340		158078
I2S	With aplay command ALSA -l lists capture devices too	Aplay -l should list only playback devices. Current implementation lists capture devices too in aplay -l.	Normal	SPEAr 1340	This affects the listing only. Functionality not effected.	149669

Table 7.   **List of known issues (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
I2S	Humming noise is heard at high volume	Noise is heard in audio at high volume	Normal	SPEAr 1340		149947
JPEG	JPEGCORE not able to encode the YUV data of JPEG image with varied luminance & chrominance value	Not able to encode YUV data for JPEG images that have varied luminance & chrominance part. Test the same using the diagnostic first. If the behavior is the same, log the bug to Synopsys.	Normal	SPEAr300, SPEAr310, SPEAr320S, SPEAr600		92722
LCD	Enable DMA only when required	DMA is enabled even if there is no request for display from CLCD controller. Current implementation does a memset 0 in such cases. This affects bandwidth and power consumption of system.	Normal	SPEAr300, SPEAr320S, SPEAr600, SPEAr1340		114451

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
OTG	Board hangs when connected as device (observed on fedora machine)	On connecting OTG cable B-type to SoC (making it a device) and A-type to Linux PC (making it the host) when board boots up, it hangs giving the following error: USB RESET I2C /dev entries driver Linux video capture interface: v2.00 camera 3-0: Probing 3-0 spear_camif spear_camif.3: SPEAr Camera driver attached to camera 0 vs6725 0-0010: vs6725 Device-ID=0x02::0xd5, Firmware-Ver=0x01 Patch-Ver=0x00 USB RESET zero gadget: high speed config #3: source/sink req 80.06 protocol STALL; err -22 Following parameters were enabled from menuconfig Synopsys DWC OTG Controller DWC Mode Selection (DWC OTG Mode) DWC DMA/SlaveMode Selection (DWC DMA Mode) DWC Little Endian Register DWC FIFO Little Endian USB Gadget Support -->; USB Peripheral Controller (Synopsys designware OTG Device Controller)	Plus	SPEAr 1340		157742
OTG	USB OTG: Kernel crashes when OTG type-A connector detached	Connect Type-A plug on SoC. On detaching this plug the kernel crashes. No device is connected on Type-B plug.	Plus	SPEAr 1340		157811

Table 7. List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
OTG	USB OTG: Pen drive is not detected when Type-A connector is inserted after B.	Connect B-type end of OTG cable to pen drive (device). Power up board. Connect A-type to SoC (Soc is now host). Pen drive is not detected. When A-type is connected: `Last login: Thu Jan 1 00:00:20 +0000 1970 on /dev/console. No mail. <a href="mailto:root@192.168.1.10" TargetMode="External">root@192.168.1.10</a>:~# port_otg_wqfunc Init: Port Power? op_state=a_host Init: Power Port (1) OTG Interrupt: Debounce Done` If pen drive is removed and inserted again, it is detected.	Normal	SPEAr 1340	Reconnect pen drive and it will work	157824
OTG	USB OTG: USB hub not working over OTG port	Connect Type-A plug to SoC. Connect Type-B plug to a USB hub. Once hub is connected it powers up. If a pen drive is connected, an over-current change message and hub powers off. Remove the Type-A end and reconnect it for OTG to be redetected.	Normal			157843
OTG	Some pen drives do not work under stress	Large data copy on Kingston fails (400 MB transfer fails)	Minor	SPEAr 1340		146543
Others	Linux kernel compilation displays warning messages	Compiling Linux-2.6 kernel displays many warning messages. Although most warnings are related to unused variables, they were not displayed in previous LSP releases.	Plus	All		157369

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
PCIE	PCIE to SATA card (sil24) does not work	If PCIE to SATA card (sil24) is connected, Linux kernel crashes	Minor	SPEAr 1340	This does not work with CPU frequency of 600 MHz. Lower CPU frequency is fine. Card works properly if some delay is inserted in sil24 driver after sil24 controller init. Sent issue to driver owner.	151578
PCIE	NFS not coming UP from PCIe Ethernet card	Booting from PCie causes Ethernet crash message	Plus	SPEAr 1310-A		110231
Power Management: Hibernation	Error message of CPU stall on hibernation	On putting system into hibernation following error messages are obtained: INFO: rcu_sched_state detected stall on CPU0 (t=6000 jiffies)	Normal	SPEAr 1340 SPEAr 1310-A	Error message displays but system goes into hibernation and wakes properly	150564
Power Management: Suspend to RAM	Random errors from SMI if system is suspended to RAM	Error from SMI controller if system is suspended to RAM and then woken up in loop along with heavy access of NOR connected on SMI controller.	Minor	SPEAr 1340 SPEAr 1310	This random bug does not occur always	150671
PWM	PWM period cannot be configured for more than 2 seconds	Standard PWM header file [include/linux/pwm.h] takes duty and period as integer, and can support up to 4 sec. Our PWM can be configured for 12 sec using the variable (period, duty) for U64. PWM configuration is in nanoseconds, so 12 sec is 12000000000.	Normal	SPEAr 320S		81163

Table 7. List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
SD/MMC	Few kernel standard test fail	Few standard MMC tests fail (test 15 and test 17), though normal file operations and iozone tests pass. Both the tests correspond to error cases.	Minor	SPEAr300, SPEAr320S, SPEAr1310-A, SPEAr1340	Normal functionality is not affected	103988
SPDIF/I2S	aplay -L listing not correct	Current listing shows only card information. No information about play back device i2s and SPDIF.	Plus	SPEAr 1340	ALSA library should have proper name of device in configuration files. This is not present but does not affect functionality.	149665
SPDIF	SPDIF: IN: SPDIF does not exit on record even after duration of OFF (sampling frequency is 8000).	SPDIF does not exit on record even after duration of OFF. With Creative Sound Blast, record file size does not increase.	Normal	SPEAr 1340		157368
SPDIF	SPDIF: IN: Record failing from Creative device	Recording on SPDIF does not work with external device (Creative USB sound blaster). Verified that this sound blaster is giving proper output by playing it on AV receiver. SPDIF OUT plays on AV receiver.	Plus	SPEAr 1340		157838
SPDIF	SPDIF: OUT: First few words are missing	When SPDIF mono standard OS files are played (Rear_Left.wav or Front_Left.wav), the first word Front is not heard properly. This always happens when audio is played.	Plus	SPEAr 1340		157839
SSP	Unable to mount file system on memory	System is tested with SPI memory attached to board. This memory exports mtd block. Trying to mount any file system fails.	Normal	SPEAr 600	Other SPI memory read-writes work	141767

Table 7. **List of known issues (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
UART	RAS UART fails with large data transfers	RAS UART: Fail in DMA mode when transfer is in multiples of 200 bytes	Minor	SPEAr 320S		145738
UART	UART data transfer missing data above 115200	System is tested with either external loopback, or data using two ports of same or different UART. UART comparison fails at speeds above 115200.	Minor	SPEAr 320S	Flow control should be used in case of data loss	78347
UART	UART1 does not work on SPEAr1310-A	No data transfer on UART1	Plus	SPEAr1310-A SPEAr320S		158628
USB host	EVALSP320SHMI: udev exception	If USB is connected on the board when it is booted, following exception occurs: udevadm settle - timeout of 3 seconds reached, the event queue contains: /sys/devices/platform/spear-ohci.0/usb2/2-1/2-1:1.0/host0/target0:0:0/0:0:0:0/block/sda/sda1 (670)	Normal	SPEAr 320S		156266
USB host	S300/320S: USB speed issue at different ports on 3xx devices	Inserting pen drive on S300/320S boards, on minicom provides following speeds for both USB ports: Upper port: Full speed Lower port: High speed. Both ports should be enumerated as high speed.	Plus	SPEAr300, SPEAr310, SPEAr320S		157631

Table 7.   **List of known issues (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
USB host	USB pen drive reset between data transfer	Large file copy between a USB pen drive and another device (USB host, PCIE/USB convertor, NFS) sometimes causes a reset of pen drive. Sometimes USB pen drive is also marked as read only.	Plus	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A, SPEAr1340		96569
USB utils	Flashing utility on SPEAr 1340 NAND	Flasher does not detect the NAND device on SPEAr1340	Plus	SPEAr 1340		158076
USB utils	Flashing utility with USB hub between PC and EVALSP1340CPU R1/R2.x	When Flashing the EVALSP1340CPU R1/R2.x with USB hub as the interface, the Flasher displays error message: `Firmware couldnot be uploaded. Restart the board and try again.`	Normal	SPEAr 1340		157943
USB device	Loopback tests fail if the configuration is switched to loopback from source sink	SPEAr board is powered up with USB device in bulk loopback and source sink configuration (default configuration) and connected to Linux PC. Configure device in loopback and perform tests. Then switch configuration to source sink and run tests. Then switch to loopback configuration and run tests.	Normal	SPEAr300, SPEAr310, SPEAr320, SPEAr600, SPEAr1310-A, SPEAr1400	Device with single configuration works properly	73955

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
USB device	testUSB tests failing randomly with USB device on SPEAr1310 (also getting bad OUT byte prints on console)	Multiple loops of various test cases of test USB application via a shell script randomly fail in either test 3 or test 1 (with the error message "Broken Pipe", error number 32)	Normal	SPEAr600, SPEAr300, SPEAr310 SPEAr320, SPEAr1310-A, SPEAr1340		111758
U-Boot	*USB start* fails after a *USB stop* in U-Boot		Minor	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A, SPEAr1340		114777

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
U-Boot	Need to copy kernel from PNOR to DDR before booting kernel	On PNOR, XIP does not work in cases where PNOR is not 32 bit. In such cases kernel should be copied to DDR. The bug is that you need to issue byte access instructions for 8 bit NOR, half word for 16 bit and word for 32 bit NOR because EMI does not break word access into half word access for 16 bit NORs. Therefore trying to access 16 bit NOR through word instructions results in ABORT. For "bootm" there is no control on access width because it is XIP.	Normal	SPEAr 310		79217
U-Boot	Serial NOR Flash and parallel NOR Flash can not be accessed simultaneously	Not able to use the serial and parallel NOR Flash from u-boot. This is also the root cause for USB utility not supporting the parallel NOR Flashing.	Plus	SPEAr 310		82695
U-Boot	Copy from RAM to unaligned Flash addresses does not work	Copy from RAM to unaligned addresses does not work but at aligned addresses OK.	Minor	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A, SPEAr1340		82797

Table 7.   List of known issues (continued)

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
U-Boot	imls does not show if rootfs is present on NOR	Running imls command on u-boot prompt provides no information about rootfs	Normal	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A, SPEAr1340		141247
U-Boot	USB boot does not work with certain pen drives	USB pen drives not working for USB boot are Kingston DT101 G2 (8GiB) Moserbear	Normal	SPEAr 1340		139385
U-Boot	Random copy to Flash failures	Sometimes copying to Flash gives error `copy to Flash... flash.c[221] FIXME: rc=-5`	Plus	SPEAr300, SPEAr310, SPEAr320S, SPEAr600, SPEAr1310-A, SPEAr1340	Error flags of SMI controller are not cleared before new transfers, which results in failure even of new transfers. Bug kept open for possible other causes of this failure.	146182

Table 7.   **List of known issues (continued)**

Category / Component	Summary	Description	Severity	Relevant targets	Workaround	ID
Video In	Frame loss for increase in number of frames captured	Frames are lost when number of frames captured from the VideoIn is increased. *Loss Scenario*: Resolution = 640*480 Number of frames to be captured = 2000 bpp = 32 Image size received = 2147483647 bytes. Image size should be = 2457600000 Number of frames lost increases if number frames captured increases.	Normal	SPEAr 1340		154097
Video In	ENUMINPUT ioctl returns two inputs	ENUM INPUT ioctl returns two inputs on enumeration: – index=0, type=2, name= 1st Input,std=31, status=0 – index=1, type=2, name= 2nd Input,std=31, status=0 v4l2 documentation says that Video inputs and outputs are physical connectors of a device and for VIP. We have only one connector.	Normal	SPEAr 1340		155324
XLoader	XLoader Bootargs and U-Boot default bootargs	XLoader bootargs and U-Boot default bootargs pick file system from wrong mtdblock. Mtdblock for NOR or NAND is shifted due to new mtd block created because of SPI memory. – Either fix sequence of mtdblock same as in earlier release or – Change bootargs in XLoader and U-Boot	Plus	SPEAr 1340		140826

7 Limitations

The following table reports known limitations related to this LSP version. Note that some limitations reported at software level can actually be caused by hardware constraints.

Table 8.   List of known limitations

Category / component	Summary	Severity	Targets
ADC	DMA mode of ADC is not working due to hardware limitation	Plus	SPEAr300
SD/MMC	Many SD/MMC cards do not work due to timing issues on EVALSPEAR300 board	Plus	SPEAr300
Ethernet (SMII) 1 and 4	Not able to test due to board issue	Minor	SPEAr310
Ethernet (SMII)	SMII1 and SMII3 not working due to board issue		SPEAr1310-A
RS485	Due to board issue, RS485-2 is not working		SPEAr310
RTC	RTC does not increment time under battery only condition	Plus	SPEAr1340
Power management: RTC wake (in suspend to RAM)	Due to hardware issue, wake up from RTC is not working	Plus	SPEAr1310-A
Power management: GPIO	GPIO does not work after suspend to RAM, due to hardware issue. This affects IPs using GPIO such as SPI	Plus	SPEAr1310-A

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9 Revision history

Table 9.   Document revision history

Date	Revision	Changes
02-Apr-2012	1	Initial release.
04-May-2012	2	Modified *Table 2: Target platforms*. Modified last bullet in *Chapter 4*, page 10. Modified *Table 4* and header in *Table 5*.

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