VAYU-BSP-01.01.00.10 ReleaseNotes

BSP Version 01.01.00.10

Release Notes
4th July, 2013

Important Note

This release is for TDA2xx (Vayu) platform.

Document License

Introduction

This release notes provides important information that will assist you in using the BSP software package. This document provides the product information and know issues that are specific to the BSP software package.

New in this Release

- VIP, VPE, DSS, I2C, and UART drivers unit tested on Tda2xx EVM and vision daughter card
- `FVID2_DF_BGRX24_8888` and `FVID2_DF_BGRX16_5551` formats added to FVID2 format enums
- Platform
  - `Bsp_platformSetPllFreq` API added to program (video/HDMI)PLL. Currently this API will only configure VIDEO1 PLL to (29.232*4)Mhz, input parametes to this API are not processed.
  - `Bsp_platformSetVencClkSrc` API added to select the clock source for LCD1, LCD2, LCD3 Vencs in DISPC block.
  - `Bsp_platformSetDispcFuncClkSrc` API added to select the clock source for DISPC Functional clock.
- `BSP_DEVICE_MAX_HANDLES` macro in `bsp_device.h` file increased to 6 to support 6 VIP channel capture from multi-serializer board

Installation and Usage

Installation and Usage of the BSP package could be found at BSP_UserGuide

Upgrade and Compatibility Information

- **Common**
  - Build: Serial driver library build and example build is added as part of the default build. Now giving `gmake -s examples` and `gmake -s bsp` wil build the serial driver examples and libraries as well. Most of the serial drivers need EDMA3 LLD package and hence the corresponding EDMA3 LLD path in the `Rules.make` file should be modified accordingly. Alternatively for building video examples and libraries alone, user could use `gmake -s video` and `gmake -s bsp_video` options.
- **VIP Capture**

    - None
- **VPE M2M**
    - None
- **DSS Display**
    - If VIDEO1 PLL is used as source for LCD1 Venc by calling `Bsp_platformSetPllFreq`, to get 60fps for 800x480(LCD) resolution program LCD and PCD values as 1 and 4 respectively in `IOCTL_VPS_DCTRL_SET_VENC_PCLK_DIVISORS` IOCTL.
- **UART**
    - None
- **McSPI**
    - None
- **I2C**
    - All Write and Read API's are blocking,i.e call returns only after write/read is completed.
    - Delays in the driver are removed and driver depends on the status than delay.Examples of some of the side effect of this
        - EEPROM write cycle time is 5ms, so data cannot be read back after writing without a delay of 5ms in application.
        - For configuring LCD panel delay of 5ms is required after powering on TLC59108 chip and doing I2C writes to it.
        - Before this release delay in the application was not required as there were delays in the driver it self.
- **McASP**
    - `frSyncCtl` member of `Mcasp_HwSetupData` is reverted back to UInt32 instead of `Mcasp_HwFrSyncCtl` structure with individual fields
- **Audio**
    - Release build supported for c6x cores on TI814X and TDA2XX

Dependencies

This release requires following tools/packages to be installed.

- Starterware Package: 00.02.02.12
- Code Composer Studio Version: 5.4
- XDC Tools Version: 3.25.01.65
- BIOS Version: 6.35.02.45
- CG Tool (TMS470) Version: 5.0.4
- CG Tool (C6000) Version: 7.4.2
- EDMA LLD: 02.11.08.05

Devices Supported

- TDA2xx

Application Boards Supported

- TDA2xx base board + LCD board
- TDA2xx Vision application board

What is Supported

Common

- Supports for TDA2xx EVM/VIRTIO/Zebu
- Supports FVID2 interfaces for all the supported drivers
- Package includes BSP driver sources, sample applications that demonstrate use of drivers and sample applications executables
- BIOS SMP mode is enabled and tested
- Benelli M4 (IPU1) Core 0 for TDA2xx
- Virtual to physical address translation for VPDMA descriptor memory is supported

VIP Capture Driver

- Supports VIP capture driver (12 instance on TDA2xx)
- Support for OV10635 capture for TDA2xx vision daughter card

VPE M2M Driver

- Supports VPE1 path
- Supportted Input Formats: YUV422I, YUV420SP and YUV422SP
- Supportted Output Formats: YUV422I, YUV420SP, YUV422SP, RGB888 and YUV444
- Supports SC and DEI

DSS Display Driver

- Supports DSS display driver with all pipelines going to any LCD, blended or without blending
- Supports display controller driver to set the display paths and VENC resolution

UART Driver

- Device Driver for UART on ARM M3,M4
- Sample Application that demonstrate the use of driver for UART - Echo Test.

McSPI Driver

- Device Driver for McSPI on ARM Cortex M3,M4
- Sample Applications that demonstrate the usage of Driver:
  - Writes to On Board Serial Flash in case of TI814X
  - EVM to EVM Communication for both TI814X and TDA2XX
  - Loopback Testing for TDA2xx

I2C Driver

- Device Driver for I2C on M4 Core
- GIO and IOM Model APIs are supported for Application
- Sample Application that demonstrate the usage of Driver:

McASP Driver

- Device Driver for McASP on DSP Core
- Sample Application that demonstrate the usage of Driver:
- Driver expects the data (samples) to be in a specific format when requesting for an IO transfer based on below configurations
  - Single Serializer
  - Multiple Serializer
  - BurstMode
  - Multislot TDM/I2S
  - DIT

Audio Driver

- Device Driver for Audio on DSP Core
- Every Instance can support multiple codecs
- Sample Applications that demonstrate the usage of Driver
  - Sine Tone Generation
  - Loopback Application

Aic31 Driver

- Device Driver for AIC31 on DSP Core
- Appropriate interfaces to configure the initial values of gain, sample rate
- Interfaces to control the codec specific features like sample rate etc

Features

VIP Capture Driver Features

Feature	Supported	Tested on EVM
12 instances (3 VIP x 2 Slice x 2 Port)	YES	YES, Only one instance
8/16-bit Embedded Sync	YES	NO
8/16/24-bit Discrete Sync	YES	YES (only 8-bit VSYNC/HSYNC mode)
YUV422I, YUV420SP, RGB888 output formats	YES	YES
YUV422SP, YUV444 output formats	YES	YES
Sub-frame based capture	YES	YES
Sub-frame based OTF use case	YES	NO
Bypass mode	YES	NO
Inline SC	YES	YES
Inline CSC	YES	YES
Configurable VPDMA Line Limit Feature	YES	YES

Buffer Capture Modes - drop frame, last frame repeat, circular frame repeat	YES	YES
Frame Drop IOCTL	YES	YES
Instance and channel status	YES	YES
Re-packer	YES	YES (only on TDA2xx Zebu)

VPE M2M Driver Features

Feature	Supported	Tested on EVM
VPE1 instance	YES	YES
YUV422I, YUV420SP, YUV422SP input formats	YES	YES
YUV422I, YUV420SP, YUV422SP, RGB888, YUV444 output formats	YES	YES
SC Support (cropping, scaling)	YES	YES
Lazy loading of SC coefficient	YES	YES
DEI Support (bypass and in deinterlacing mode)	YES	YES
Sub-frame processing	NO	NO
Runtime parameter change	YES	YES

DSS Display Driver Features

Feature	Supported	Tested on EVM
All instances (Video1,2,3 and GRPX1)	YES	YES
All LCD/DPI outputs	YES	YES (only DPI1 tested on EVM)
On-Chip HDMI output	NO	NO
8/16-bit Embedded Sync	NO	NO
24-bit Discrete Sync	YES	YES
8/16 bit Discrete Sync	No	No
YUV422I (YUYV), YUV420SP, RGB888 input format	YES	YES
YUV444, YUV422I (UYVY) input formats	NO	NO
Bypass mode	NO	NO
Inline SC	YES	YES
Inline CSC	YES	YES
Blending	YES	YES
Low-latency display (ability to queue frame to driver/hardware just before VSYNC)	YES	YES
Interlaced frame display (fields merged/separated)	YES	NO

UART Driver Features

Feature	Supported	Tested
Single instance	YES	YES
Multi instance and Re-Entrant	YES	NO
Each Instance as Transmitter and / or receiver	YES	YES
DMA Mode Of Operation	YES	YES
POLLED Mode Of Operation	YES	YES
INTERRUPT Mode Of Operation	NO	NO

I2C Driver Features

Feature	Supported	Tested
Single instance	YES	YES
Multi instance and Re-Entrant	YES	YES
Slave Device Probe IOCTL	YES	YES
Each Instance as Master Transmitter	YES	YES
DMA Mode Of Operation	NO	NO
POLLED Mode Of Operation	YES	YES
INTERRUPT Mode Of Operation	YES	YES

McSPI Driver Features

Feature	Supported	Tested on Tda2xx	Tested on TI814x
Single instance	YES	YES	YES
Multi instance and Re-Entrant	YES	YES	YES
Each Instance as Transmitter and / or receiver	YES	YES	YES
DMA Mode Of Operation	YES	YES	YES
POLLED Mode Of Operation	NO	NO	NO
INTERRUPT Mode Of Operation	NO	NO	NO

Audio Driver Features

Feature	Supported	Tested on Tda2xx	Tested on TI814x
Multi instance and Re-Entrant	YES	YES	YES
Each Instance as Transmitter and / or receiver of an audio device	YES	YES	YES
DMA Mode Of Operation	YES	YES	YES
POLLED Mode Of Operation	NO	NO	NO
INTERRUPT Mode Of Operation	NO	NO	NO

McASP Driver Features

Feature	Supported	Tested on Tda2xx	Tested on TI814x
Single instance	YES	YES	YES
Multi instance and Re-Entrant	YES	YES	YES
Each Instance as Transmitter and / or receiver	YES	YES	YES
Multiple Data Formats	YES	NO	NO
Configurations to operate: multi-slot TDM, I2S, DSP	YES	YES	YES
Configurations to operate: DIT (S/PDIF)	YES	NO	NO
Desired data (such as NULL tone), when idle Transmission Mechanism.	YES	YES	YES
Explicit control of PIN directions for High Clock, Bit Clock and Frame Sync PINS.	YES	YES	YES
DMA Mode Of Operation	YES	YES	YES
POLLED Mode Of Operation	NO	NO	NO
INTERRUPT Mode Of Operation	NO	NO	NO

AIC31 Codec Driver Features

Feature	Supported	Tested
Multi instance and Re-Entrant	YES	YES
Independant Configuration of Transmitter and receive of an audio device with and multiple audio codecs	YES	YES
Interfaces to control the codec specific features like sample rate etc	YES	YES
Appropriate interfaces to configure the initial values of gain, sample rate etc	YES	YES

Driver Maturity

Driver Maturity

Driver	TDA2xx	TI814x
VIP Capture	Beta 1.0	NA
VPE M2M	Beta 1.0	NA
DSS Display	Beta 1.0	NA
UART	Beta 1.0	Beta 1.0
McSPI	Alpha 1.0	Alpha 1.0
I2C	Beta 1.0	Beta 1.0
McASP	Alpha 1.0	Alpha 1.0

Supported/Validated Examples

Supported/Validated Examples

Examples	TDA2xx-EVM
VIP Capture	YES
VIP Sub-frame	YES
VPE M2M	YES
DSS Display	YES
Loopback	YES
UART ECHO	YES
MCSPI LOOPBACK	YES
MCSPI MASTER SLAVE BOARD TO BOARD	YES
I2C ON Board LED Blink	YES
Audio SINE TONE GENERATION using AIC31Codec	YES
Audio Loopback Application	YES

- Examples could be found at `$BSP_Install_Dir\examples\`

What is Not Supported

- Checking for most of the input parameters for out of range and invalid values is not done
- Scaler lazy loading and user coefficient loading are not supported in VIP capture driver
- VIP Reset IOCTL is not supported in VIP capture driver. The driver internally resets the VIP during driver create.
- Detailed TI81xx to TDA2xx driver migration guide is not provided. Instead an overview of the migration guide PPT is provided in the docs folder.
- Mux-mode VIP capture is not supported
- Multiple stream outputs from same video source is not supported
- McASP and McSPI does not support Interrupt/Polled mode
- UART is not supported in Interrupt Mode
- I2C is not supported in DMA mode

Fixed in this Release

Fixed in this Release

ID	Headline	Module	Remarks
OMAPS00285667	[Capture] R and B are swapped in memory for RGB888 output from VIP with YUV Input	Capture Driver	NA
OMAPS00285670	[Capture] Back-to-back running of test cases involving different paths within VIP results in no capture	Capture Driver	NA
OMAPS00293236	[Capture App] Memory leaks observed in system heap for OV capture test option	Capture Driver	NA
OMAPS00285669	[Capture] YUV422SP and YUV444 output from VIP is not working	Capture Driver	NA
OMAPS00296266	[CaptureVip] - RAW8 input and RAW8 output swaps U and V bytes	Capture Driver	NA
OMAPS00296390	CaptureVip :- Call to IOCTL_VPS_CAPT_GET_VIP_PARAMS never returns	Capture Driver	NA
OMAPS00294573	[Board] Video mux control on vision board through GPIO is not working	Board Driver	NA
OMAPS00294661	[Display App] - Auto Run causes failure during lcd ctrl create	Display Driver	NA
OMAPS00296595	[Display] Memory leak is observed in BSS heap for all display UT testcases	Display Driver	NA
OMAPS00295236	Details regarding the DSS 4 pipeline sample application missing from the user guide	Display Driver	NA
OMAPS00293249	Display App autorun completes with memory leak warning	Display Driver	NA
OMAPS00293246	NV12 format when selected does not appear correctly	Display Driver	NA
OMAPS00296332	Display : Display output is not proper for the vertical scaling ratio of 1/4 for the input resolution 800x480	Display Driver	NA
OMAPS00297169	[Display] Timestmap of displayed buffer is not updated	Display Driver	NA
OMAPS00296619	[Display] VID and GRPX pipeline dataformats is mapped for wrong fvid2Fmts	Display Driver	NA
OMAPS00295674	Display : DSS Driver results in system crash for Start and STOP Test.	Display Driver	NA
OMAPS00296223	Display : DSS Driver create fails for the Dctrl connected path VID1 -> LCD2 -> DPI1	Display Driver	NA
OMAPS00294479	[Display] - First Queued Buffer is not display	Display Driver	No fix needed. It was wrongly raised.
OMAPS00291423	[VPE] Driver delete asserts when FVID2_stop is called when requests are pending with the driver	VPE Driver	NA
OMAPS00291491	[VPE M2M] R and B are swapped for RGB888 output and Y and V are swapped for YUV44 output from VPE	VPE Driver	NA
OMAPS00297063	[VPE] Start/stop test case fails with memory failure error	VPE Driver	NA
OMAPS00294714	I2C LIB has a Core Specific Internal Delay, this needs to be fixed	I2C Driver	NA
OMAPS00294716	I2C Read or Write Passes Even if there is no slave device	I2C Driver	NA
OMAPS00294856	[Vayu] I2C Interrupt Mode does not work for DSP Core	I2C driver	NA
OMAPS00294862	[Vayu] McASP SineTone Application out put needs to be configured to I2S Mode (1 Word Length)	McAsp	NA
OMAPS00294867	Audio LoopBack Application Not validated	McAsp	NA
OMAPS00294713	UART Does not work in DMA Mode	UART Driver	NA
OMAPS00295909	BSP_init crashes when called for second time.	System	NA
OMAPS00296392	[Serial] Example applications build fails for all which uses EDMA library	Build	NA

OMAPS00293520	[Build] Drivers should be build without --gcc option	Build	NA
OMAPS00294386	Readme.txt not clear	Documentation	NA
OMAPS00295279	[Docs] User guide should have compile options details	Documentation	NA
OMAPS00297172	Several TBD in BSP_FeaturePerformanceGuide.pdf	Documentation	NA
OMAPS00292458	Memory Datasheet needed	Documentation	NA
OMAPS00295091	Documentation needs update for modular build & capture modes (last frame repeat, frame drop mode, circular repeat)	Documentation	NA
OMAPS00295280	[Package] The test input files required by example application needs to be packaged	Example	NA

Known Issues / Limitations

Known Issues

ID	Headline	Module	Workaround in this release
OMAPS00296239	Display : VID3 pipeline output results in black output when zorderEnable is disabled	Display Driver	NA
OMAPS00291957	Display :- Low latency display is not supported for Overlays other than LCD1.	Display Driver	This is a DSS IP limitation
OMAPS00294449	[OV10635] Set config IOCTL is not implemented	Sensor Driver	Default values programmed at create time will generate 1280x720 YUV output at 30 FPS. Hence this IOCTL need not be called
OMAPS00294859	[Vayu] Audio Codec Configuration for Audio Example is done via I2C Polled Mode - Interrupt Mode not working	McASP	NA
OMAPS00294864	[Vayu] McASP does not work in Slave Mode for audio codec application	McASP	NA
OMAPS00297251	[BSP_Audio]DSP Audio Applications needs to be loaded and run twice to execute properly	McASP	NA
OMAPS00295369	McASP Application Needs to set pdir exclusively	McASP	NA
OMAPS00296616	[McSPI] Slave mode testing is not completed	McSPI	NA
OMAPS00295277	[Docs] Detailed migration guide is required	Documentation	NA

Common

- While validating the sample application on Zebu, it is observed that when very short frames is given as input to VIP or very small size sub-frame is configured in VIP or when the display resolution is small, the M4 is not getting time to run the task context. This is because of back-to-back interrupts from the VIP/DSS. Because of this the application task never gets time to execute and hence the application never ends even though the outputs are captured/displayed properly. Hence it is recommnended to use bigger frame size for VIP/DSS. This issue is also due to the fact that the M4 in Zebu is currently configured to run in bypass mode (equivalent to 20 MHz) and also cache is disabled.

VIP Capture Driver

- 8/16/24-bit RAW capture - No support in EVM
- RGB888 input to VIP - No support in EVM/Simulator
- Various discrete sync modes except HSYNC/VSYNC mode - No support in EVM

VPE M2M Driver

- YUV444 output is not modeled in Virtio and the test results in hang. This feature is validated/supported only on Zebu/Silicon.

DSS Display Driver

- Blended output (say 1 Video + GRPX) on Virtio is not proper as it is not modeled properly on Virtio

Serial Drivers

- UART Baud rates greater than 115200 are not supported due to high error percentage observed for baud rates greater than 115200.
- UART single byte transfer is supported in Polled Mode and not in DMA Mode.
- I2C Interrupt Mode is not working on DSP Core, we will be using Polled Mode in DSP Core.

Validation Information

- This release is validated on TDA2xx EVM for the above mentioned components
- In case of serial drivers, this release is validated on TI814x ES2.1 as well

Technical Support and Product Updates

For further information or to report any problems, contact http://e2e.ti.com or http://community.ti.com or http://support.ti.com.

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