VAYU-BSP-01.00.02.08 ReleaseNotes

BSP Version 01.00.02.08

Release Notes
10th April, 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

- Bring-up readiness release
- Supports TDA2xx Vision daughter card
- Supports OV10635 sensor and LCD drivers present in Vision daughter card
- Support of platform functions to select DSS clock source
- First release of I2C driver based on BIOS IOM model
- First release of McASP, AIC31 codec, Audio drivers
- DSP Build Support which is needed for Audio and McASP drivers
- DSS - New IOCTL `IOCTL_VPS_DCTRL_SET_VENC_PCLK_DIVISORS` added in display controller driver
  - This IOCTL will program Venc divisors (LCD and PCD) values, in earlier release the values were set internally to LCD = 1 and PCD =2, If application doesn't set default values of these are LCD =1 and PCD = 4

Installation and Usage

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

Upgrade and Compatibility Information

- **Common**
  - TDA2SEDX is renamed to TDA2XX. This change is done throughout the files including the build and header files. Now application should use `tda2xx-evm` and `tda2xx-virtio` to build driver libraries.
  - Board module: Added power-on function to explicitly power on the devices present in the EVM. This has to be called prior to calling `Bsp_boardSelectDevice()` and `Bsp_boardResetDevice()` board API.
- **VIP Capture**
  - None

- **VPE M2M**
  - None
- **DSS Display**
  - `IOCTL_VPS_DCTRL_SET_PIPELINE_PARMS` is renamed to `IOCTL_VPS_DCTRL_SET_PIPELINE_PARAMS`
  - `IOCTL_VPS_DCTRL_SET_OVLY_PARMS` is renamed to `IOCTL_VPS_DCTRL_SET_OVLY_PARAMS`
  - New IOCTL `IOCTL_VPS_DCTRL_SET_VENC_PCLK_DIVISORS` added in display controller driver.
    - This IOCTL will program Venc divisors (LCD and PCD) values, in earlier release the values were set internally to LCD = 1 and PCD =2,If application doesn't set default values of these are LCD =1 and PCD = 4.
- **UART**
  - Polled Mode Support is enabled to enable single byte transfers which is costly in DMA Mode
- **McSPI**
  - None
- **I2C**
  - BIOS IOM model is used. All the earlier BSP interfaces is removed.
- **McASP**
  - None
- **Audio**
  - None

Dependencies

This release requires following tools/packages to be installed.

- Starterware Package: 00.01.00.07
- Code Composer Studio Version: 5.4/5.2.0.00055
- XDC Tools Version: 3.25.00.48
- BIOS Version: 6.35.01.29
- CG Tool (TMS470) Version: 5.0.2
- EDMA LLD: 02.11.06.01

Devices Supported

- TDA2xx EVM
- TDA2xx Zebu [1.2.5]
- TDA2xx Virtio Simulator [Phase 5.3]

Application Boards Supported

- 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
  - EVM to EVM Communication

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
12 instances (3 VIP x 2 Slice x 2 Port)	YES	YES
8/16-bit Embedded Sync	YES	YES
8/16/24-bit Discrete Sync	YES	YES (only 16-bit VSYNC/HSYNC mode)
YUV422I, YUV420SP, RGB888 output formats	YES	YES
YUV422SP, YUV444 output formats	NO	NO
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
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
All instances (Video1,2,3 and GRPX1)	YES	YES
All LCD/DPI outputs	YES	YES
On-Chip HDMI output	NO	NO
16-bit Embedded Sync	NO	NO
24-bit Discrete Sync	YES	YES
8/16 bit Discrete Sync	No	No
YUV422I (YUYV) input formats	YES	YES
YUV420SP, RGB888, YUV444, YUV422I (UYVY) input formats	NO	NO
Bypass mode	NO	NO
Inline SC	NO	NO
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	YES

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 IOCTOL	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
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	NO	NO
INTERRUPT Mode Of Operation	NO	NO

Audio Driver Features

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

McASP Driver Features

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

DMA Mode Of Operation	YES	YES
POLLED Mode Of Operation	NO	NO
INTERRUPT Mode Of Operation	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	Pre-Alpha 1.0	NA
VPE M2M	Pre-Alpha 1.0	NA
DSS Display	Pre-Alpha 1.0	NA
UART	Pre-Alpha 1.0	Pre-Alpha 1.0
McSPI	Pre-Alpha 1.0	Pre-Alpha 1.0
I2C	Pre-Alpha 1.0	Pre-Alpha 1.0
McASP	NA	Pre-Alpha 1.0

Supported/Validated Examples

Supported/Validated Examples

Examples	TDA2xx-Zebu	TDA2xx-Virtio	TI814x-EVM
VIP Capture	YES	YES	NA
VIP Sub-frame	YES	YES	NA
VPE M2M	YES	YES	NA
DSS Display	YES	YES	NA
Loopback	YES	YES	NA
UART ECHO	NA	NA	YES
MCSPI READ-WRITE ON SPI FLASH	NA	NA	YES

MCSPI MASTER SLAVE BOARD TO BOARD	NA	NA	YES
I2C ON Board LED Blink	NA	NA	YES
Audio SINE TONE GENERATION using AIC31Codec	NA	NA	YES
Audio Loopback Application	NA	NA	YES

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

What is Not Supported

Common

- 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

TDA2xx

- None

Fixed in this Release

Fixed in this Release

ID	Headline	Module	Remarks
OMAPS00292992	DSS :- LCD1 venc is used for all the Venc's in VpsCore_DctrlSetPathInfo API	DCTRL Driver	NA
OMAPS00291955	Display :- Error in validating Display Params, Panel resolution is used instead of pipeline output resolution.	DSS Display Driver	NA
OMAPS00292893	UART driver: With the length 1, 1 char read does not happen	UART Driver	NA

Known Issues / Limitations

Known Issues

ID	Headline	Module	Workaround in this release
OMAPS00285667	[Capture] R and B are swapped in memory for RGB888 output from VIP with YUV Input	VIP Capture Driver	None
OMAPS00285669	[Capture] YUV422SP and YUV444 output from VIP is not working	VIP Capture Driver	None
OMAPS00285670	[Capture] Back-to-back running of test cases involving different paths within VIP results in no capture	VIP Capture Driver	Application can reset CPU and reload application for running a different VIP configuration test
OMAPS00287369	[Capture] Descriptor error in channel status is always set	VIP Capture Driver	VIP driver wrongly reports descrioptor error in the channel status information. Application could ignore this
OMAPS00291423	[VPE] Driver delete asserts when FVID2_stop is called when requests are pending with the driver	VPE M2M Driver	Wait for all the request to complete and then call FVID2_stop and FVID2_delete
OMAPS00291491	[VPE M2M] R and B are swapped for RGB888 output and Y and V are swapped for YUV44 output from VPE	VPE M2M Driver	None
OMAPS00293236	[Capture App] Memory leaks observed in system heap for OV capture test option	VIP Capture Driver	None
OMAPS00293184	[OV10635] Resolution and frame rate from OV sensor is not as per requirement	OV1063X Device Driver	None
OMAPS00293246	NV12 format when selected does not appear correctly	DSS Display Driver	None
OMAPS00291957	Display :- Low latency display is not supported for Overlays other than LCD1	DSS Display Driver	This is a hardware limitation
OMAPS00293249	Display App autorun completes with memory leak warning	DSS Display Driver	None
TBD	DSP Build on TDA2XX Fails	Audio and McASP Driver	None

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 becasue 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 recommneded 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 modelled in Virtio and the test results in hang. This feature is validated/supportted only on Zebu.

DSS Display Driver

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

Validation Information

- This release is validated on TDA2xx VIRTIO/Zebu for the above mentioned components
- In case of serial drivers, this release is validated only on TI814x ES2.1

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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