VAYU-BSP-01.00.01.07 ReleaseNotes

BSP Version 01.00.01.07

Release Notes
5th March, 2013

Important Note

This release is for TDA2SEDx (Vayu) and TI814x platforms.

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

- Directory structure changes to have common code across starterware and drivers
- DSS display driver with GRPX blending validated on TDA2SEDx Zebu and Virtio
- First release of VPE M2M driver validated on TDA2SEDx Virtio/Zebu and TI814x
- First release of serial drivers validated on TI814x

Installation and Usage

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

Upgrade and Compatibility Information

- **Common**
  - To run any application on Virtio (5.3 or higher) the MMU needs to be configured before loading the executable via CCS. For this the user has to load and run the `M4_MMuConfig` option in the GEL file which is at `$BSP_Install_Dir/docs/tda2sedx/TDA2SEDx_virtio_config.gel`
  - Below are the directory structure changes done to align with starterware package
    - Interface header file moved from `$BSP_Install_Dir/packages/ti/bsp/module` to `$BSP_Install_Dir/include/module`. Now all the interface files are moved from top level of each module soruce folder to include folder. Application has to add `$BSP_Install_Dir/include` in the include path.
    - Driver source folder moved from `$BSP_Install_Dir/packages/ti/bsp/module` to `$BSP_Install_Dir/src/module`. Note: Application need not include any header files inside the source folder.
    - Examples folder moved from `$BSP_Install_Dir/packages/ti/bsp/examples` to `$BSP_Install_Dir/examples`

    - Below are the interface changes done to align with starterware package
        - Some of the interface files are split into "moduke"_types.h and moved to starterware package include folder. This change is hidden from the application as the actual driver interface present in this package internally includes these files appropriately. But application has to add `$Starterware_Install_Dir/include` in the include path.
        - All make rules files are moved to `$BSP_Install_Dir/build/makerules/` from `$BSP_Install_Dir/makerules`. Even the `component.mk` file is moved inside the above directory.
        - Executables and the temporary build files are generated in `$BSP_Install_Dir/binary` compared to the earlier folder of `$BSP_Install_Dir/build/`
- **VIP Capture**
    - `interruptMode` added to `Vps_SubFrameParams` structure to support sub-frame callback generation for nth line capture. By default this is set to `VPS_INTR_END_OF_EVERY_NTH_LINE` in `VpsSubFrameParams_init()` functions and no change is needed in the application if this function is called to initialize the structure before passing to the driver.
- **VPE M2M**
    - None
- **DSS Display**
    - None
- **UART**
    - None
- **McSPI**
    - None

Dependencies

This release requires following tools/packages to be installed.

- Starterware Package: 00.01.00.04
- Code Composer Studio Version: 5.4/5.2.0.00055
- XDC Tools Version: 3.24.06.63
- BIOS Version: 6.35.00.20/6.35.01.21_eng
- CG Tool (TMS470) Version: 5.0.2
- EDMA LLD: 02.11.06.01

Devices Supported

- TDA2SEDx Zebu [1.2.4]
- TDA2SEDx Virtio Simulator [Phase 5.3]
- TI814x EVM [PG 2.1]

Application Boards Supported

- TI814x VS application board
- TI814x VC application board
- TI814x Vision application board
- TI814x Catalog application board

What is Supported

Common

- Supports for TDA2SEDx VIRTIO/Zebu and TI814x EVMs
- 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 (only on TDA2SEDx Virtio)
- Benelli M4 Core 0 for TDA2SEDx and Ducati M3 Core 1 for TI814x
- Virtual to physical address translation for VPDMA descriptor memory is supported

VIP Capture Driver

- Supports VIP capture driver (4 instance on TI814x and 12 instance on TDA2SEDx)
- Support for TVP5158, TVP7002 and MT9v022 devices for TI814x daughter cards

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 (Only for TDA2SEDx)
- Supports display controller driver to set the display paths and VENC resolution

UART Driver

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

McSPI Driver

- Device Driver for McSPI on ARM Cortex M3
- Sample Application that demonstrate the usage of Driver:
  - Writes to On Board Serial Flash
  - EVM to EVM Communication

Features

VIP Capture Driver Features

Feature	Supported	Tested
12 instances (3 VIP x 2 Slice x 2 Port)	YES	YES (4 on TI814x EVM, 12 on TDA2SEDx SIM)
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 TDA2SEDx 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	NO	NO
INTERRUPT Mode Of Operation	NO	NO

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

Driver Maturity

Driver Maturity

Driver	TDA2SEDx	TI814x
VIP Capture	Pre-Alpha 1.0	Pre-Alpha 1.0
VPE M2M	Pre-Alpha 1.0	Pre-Alpha 1.0
DSS Display	Pre-Alpha 1.0	NA
UART	NA	Pre-Alpha 1.0

McSPI	NA	Pre-Alpha 1.0
I2C	NA	NA
McASP	NA	NA

Supported/Validated Examples

Supported/Validated Examples

Examples	TDA2SEDx-Zebu	TDA2SEDx-VIRTIO	TI814x-EVM
VIP Capture	YES	YES	YES
VIP Sub-frame	YES	YES	YES
VPE M2M	YES	YES	YES
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

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

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. In case of TI814x, the whole VIP is reset and hence any capture operation on other port during create of a port will be affected.
- Detailed TI81xx to TDA2SEDx 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
- UART and McSPI does not support Interrupt/Polled mode

TDA2SEDx

- None

TI814x

- None

Fixed in this Release

Fixed in this Release

ID	Headline	Module	Remarks
OMAPS00285668	[Capture] When VIP in-line scaling is performed, overflow is observed for every frame	VIP Capture Driver	None
OMAPS00286951	[Build] C++ compilation check is not done	Build	None
OMAPS00290429	[Build] gmake -s clean results in hang	Build	None
OMAPS00290290	[SC] Wrong coefficient sizes used when getting user coefficient	SC (VIP/VPE drivers)	None

Known Issues / Limitations

Known Issues

ID	Headline	Module	Workaround
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

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.
- In case of Zebu, examples are validated with SMP BIOS disabled, as enabling SMP BIOS in Zebu is not working

VIP Capture Driver

- 8/16/24-bt RAW output - 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.

Validation Information

- This release is validated on TDA2SEDx VIRTIO/Zebu and TI814x ES2.1 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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