TI81xx-HDVPSS-01.00.01.34 ReleaseNotes

HDVPSS Version 01.00.01.34

Release Notes
November 30th, 2011

Document License

Introduction

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

New in this Release

Common

M2M DEI Driver

- M2M DEI Driver: Runtime Input resolution change is now supported in deinterlacing mode as well as in DEI bypass mode.
    - When in deinterlacing mode or in progressive TNR mode, the application has to allocate bigger context buffer memory depending on the max input resolution it might change. Driver has no way of validating the actual allocated size and hence this might lead to buffer over flow in case max size is not allocated. Also at the time of input resolution change 2-3 frames after this will be invalid because of invalid context buffer content. And hence application should ignore these frames.
    - Calculating the context buffer size for a given width and height
        - For Previous Field Buffer Sizes
            - In case application wants to allocate the context buffer based on the maximum input resolution it operates with, then below equation could be used for calculating the field context buffer sizes,

                Size = Align(width, 16) * field height * 2
        - For MV and MVSTM Buffer Sizes
            - In case application wants to allocate the context buffer based on the maximum input resolution it operates with, then below equation could be used for calculating the MV/MVSTM context buffer sizes,

                Size = Align(width/2, 16) * field height
- M2M DEI Driver: Supports different input data formats for the channels on the same handle.
    - Now application could create channels with different data formats like YUV422I, YUV420SP or YUV422SP on the same handle. And application could also queue channels with different data formats in a single request (process frame call).

Capture inline scaler coefficient load

- When IOCTL call is made to set the SC params (`IOCTL_VPS_CAPT_SET_SC_PARAMS`), the scaler coefficients are reprogrammed depending on provided configuration parameter.
- If the user provides specific scaler coefficients, these are used for programming the scaler. If not provided, the driver internally calculates the scaling factor for the provided scaler params.
- The driver checks if the scaling factor has changed with respect to the current scaling factor.
- If the scaling factor, and hence the horizontal & vertical coefficients (for polyphase filter) are the same, nothing extra needs to be done.
- If the scaling factor, and hence the horizontal or vertical coefficients (for polyphase filter) have changed, the new scaler coefficients are fetched.
  - To enable loading the new scaler coefficients, the VIP instance is then stopped, the scaler coefficients programmed, the VIP instance is reset, and then restarted. This results in a maximum of two frame drops.
- If the user has not specified coefficient sets at create time, internally the best suitable coefficient sets are now retrieved based on the scaling factor and used for setting up the scaler coefficients.
- Even if the scaler is initially in bypass at create time, scaler coefficients are loaded with default values internally.
  - If scaler is brought out of bypass in `IOCTL_VPS_CAPT_SET_SC_PARAMS` ioctl, if `enableCoeffLoad` is specified as FALSE, the default coefficients will continue to be used. If `enableCoeffLoad` is specified as TRUE, new suitable coefficients shall get loaded at that time.
  - If scaler is placed in bypass through `IOCTL_VPS_CAPT_SET_SC_PARAMS` ioctl, scaler coefficient load is not done even if `enableCoeffLoad` is TRUE.
- **Interface changes:**
  - `enableCoeffLoad` param has been added to structure `Vps_CaptScParams`.
    - FALSE: Disable coefficient load: Coefficients are not loaded during `IOCTL_VPS_CAPT_SET_SC_PARAMS` ioctl.
    - TRUE: Enable coefficient load: Coefficients are loaded with frame loss during `IOCTL_VPS_CAPT_SET_SC_PARAMS` ioctl if the scaling factor has changed.

Support for 1-1 scaling coefficient set

- A new coefficient set has been added for 1-1 scaling. This is used when the input size is same as output size, but scaler is not in bypass.
  - `VPS_SC_SET_1_1` has been added to `Vps_ScCoeffSet` enum.
  - This is used internally for 1-1 scaling when scaler is not in bypass for the vertical polyphase filter, when Lazy Loading is enabled for m2m scalers, and when enableCoeffLoad is enabled for capture inline scaler.
  - The horizontal polyphase filter is not used for 1-1 scaling ratio.

TI816x

- Defect Fixes

TI814x

- Defect Fixes
- Implemented AUX path m2m drivers
  - Three new instances of m2m driver are added for AUX path,

    /** \brief SC WB memory driver instance number. */

    1. define VPS_M2M_INST_AUX_SC2_WB1 (3u)

    /** \brief SC-VIP1 memory driver instance number. */

    1. define VPS_M2M_INST_AUX_SC4_VIP1 (4u)

    /** \brief SC-WB1-VIP1 dual output memory driver instance number. */

    1. define VPS_M2M_INST_AUX_SC2_SC4_WB1_VIP1 (5u)

    These new instances will use the existing DEI driver interface but has no DEI in their path, so DEI related parameters should be passed as NULL from the application during create time. More details can be found in user guide at TI814X DEI M2M Drivers

    - `deiCfg` param which is member of `Vps_M2mDeiChParams` structure should be assigned NULL for new instances.
    - `deiRtCfg` param of `Vps_M2mDeiRtParams` structure should also be passed as NULL, if runtime parameters are used.

Installation and Usage

Installation and Usage of the HDVPSS package could be found at HDVPSS User Guide

Upgrade and Compatibility Information

If migrating from a older release, kindly refer to release notes present at `$HDVPSS_Install_Dir\docs\relnotes_archive\HDVPSS_ReleaseNotes_01_00_01_xx.pdf` for other upgrade information done in those releases.

VipCapture

- **Sub-frame mode** - Sub frame mode should be disabled for all output sreams for normal mode of operation.

i.e `createprms.outStreamInfo[streamNum].subFrameModeEnable = FALSE;`

- **Inline scaler coeff load** - If it is not desired to stop, reset and restart the VIP instance to load new scaler coefficients when changing the VIP inline scaler params, the `enableCoeffLoad` field in `Vps_CaptScParams` structure must be set to FALSE. In this case, scaler coefficients suitable to the new scaling ratio are not loaded, and hence there is no frame loss.

  i.e `pScParams->enableCoeffLoad = FALSE;;`

TI814x m2m

- **Aux Path m2m Drivers for TI814x** - The new instances of m2m drivers that are added for AUX path for TI814X are

`VPS_M2M_INST_AUX_SC2_WB1`, `VPS_M2M_INST_AUX_SC4_VIP1` and `VPS_M2M_INST_AUX_SC2_SC4_WB1_VIP1`. Check new in this release section for more details.

Applications

1. The m2mDeiScale applications for TI814x have been updated to Demonstrate the usage of three new instances.
2. The VC Chains application for TI816x has been updated to demonstrate the usage of the capture inline scaling coefficient load feature. Option 'h' has been added. This option has the following characteristics:
    - It does 16-bit capture using SII9135 (1080p60) and TVP7002 (1080i60).
    - It uses the `IOCTL_VPS_CAPT_SET_SC_PARAMS` ioctl to switch the output size for each VIP instance used in the application.
    - It dynamically switches the output size every few frames (the frequency of switch is configurable through the `CAPTURE_LINK_OUT_SIZE_SWITCH_FREQ` define in `captureLink_priv.h`).
    - The output height & width are either multiplied or divided by 2 randomly each time.
    - The maximum output size is limited to the input height & width, since up-scaling cannot be done.
    - The minimum input width is limited to 1/16 input width (maximum horizontal scaling ratio), with no minimum limit for height.

Other

Tools version change:

1. This release has been validated on ARM CGTOOLS version 4.9.2.

Dependencies

This release requires following tools/packages to be installed.

- Code Composer Studio Version: 4.2.0.09000 or 5.0.3.00028
- XDC Tools Version: 3.22.04.46
- BIOS Version: 6.32.05.54
- CG Tool (TMS470) Version: 4.9.2
- IPC: 1.23.05.40

Devices Supported

- TI816x EVM
- TI814x EVM

Application Boards Supported

- TI816x VS application board
- TI816x VC application board
- TI814x VS application board
- TI814x VC application board
- TI816x Catalog application board
- TI814x Catalog application board

What is Supported

Common

- Supports HDVPSS drivers for TI814x/TI816x EVMs
- Supports FVID2 interfaces for all the supported drivers
- Package includes HDVPSS DSP/BIOS driver sources, sample applications that demonstrate use of HDVPSS DSP/BIOS drivers, sample applications executables

Display Drivers

- Supports Display Controller driver
- Supports Bypass Path Display driver
- Supports Secondary Path SD Display driver
- Supports Graphics Display driver

Capture Drivers

- Supports VIP capture driver

Memory to Memory Drivers

- Supports Scalar driver through Secondary Path 0-SC5
- Supports Scalar driver through Bypass Path 0/1-SC5
- Supports SC3/4 Scalar driver through Secondary Path 0/1-SC3/4- VIP0/1
- Supports Noise filter driver
- Supports DEI driver

Driver Maturity

Driver Maturity

Driver	TI816x	TI814x
VIP 0/1 Capture	Beta 1.0	Beta 1.0
Display Controller	Beta 1.0	Beta 1.0
Bypass Path 0/1 Display	Beta 1.0	Beta 1.0
Secondary Path 1 SD Display	Beta 1.0	Beta 1.0
GRPX Path 0/1/2 Display	Beta 1.0	Beta 1.0
NSF M2M	Beta 1.0	Beta 1.0
DEIH-WB0 M2M	Beta 1.0	NA
DEIH-VIP0 SC3 M2M	Beta 1.0	NA

DEIH-WB0-VIP0 SC3 M2M	Beta 1.0	NA
DEI-WB1 M2M	Beta 1.0	NA
DEI-VIP1 SC4 M2M	Beta 1.0	NA
DEI-WB1-VIP1 SC4 M2M	Beta 1.0	NA
DEI-WB0 M2M	NA	Beta 1.0
DEI-VIP0 SC3 M2M	NA	Beta 1.0
DEI-WB0-VIP0 SC3 M2M	NA	Beta 1.0
SC2-WB1 M2M	NA	Alpha 1.0
SC4-VIP1 M2M	NA	Alpha 1.0
SC2-SC4-WB1-VIP1 M2M	NA	Alpha 1.0
Secondary Path 0 - SC5 M2M	Beta 1.0	Beta 1.0
Bypass Path 0/1 - SC5 M2M	Beta 1.0	Beta 1.0
Secondary Path 0/1 - VIP SC3/4 M2M	Beta 1.0	Beta 1.0
Proxy Server	Beta 1.0	Beta 1.0

Supported/Validated Examples

Supported/Validated Examples

Examples	TI816x	TI814x
VIP Capture	YES	YES
Chains	YES	YES (All the options of chains are not supported)
Mosaic Display	YES	YES
SD Display	YES	YES
Tri Display	YES	YES
GRPX Display	YES	YES
M2M NSF	YES	YES
M2M DEI	YES	YES
M2M DEI Mode 1	YES	NA
M2M SC Multi Channel	YES	YES

- Examples could be found at `$HDVPSS_Install_Dir\packages\ti\psp\examples\common\vps\`
- Platform specific examples could be found at `$HDVPSS_Install_Dir\packages\ti\psp\examples\ti814x or ti816x`

What is Not Supported

Common

- Runtime parameters are not supported for all m2m drivers(except NF) while operating in Subframe mode.
- Hardware Mosaic feature is not supported because of flicker observed in display when the system is loaded.

TI816x

- None

TI814x

- Chains sample applications - Option 5 and 8 of chains sample application in VC Daughter card is not supported
- Chains sample applications - Options "a" through "f" is not supported on VC Daughter card
- All Chains sample applications - tiler is not supported for both VC & VS Daughter card
- Stenciling feature of GRPX Display Driver is not supported

TI814x ES 1

- TNF, SNF, TNF+SNF bypass mode of Noise filter is not supported
- Catalog board is not validated with ES 1.0 version silicon

Fixed in this Release

Common

- SDOCM00086210 [capture]: Reset sequence is getting called twice in case of overflow
- SDOCM00084557 [Capture]: Continuous overflow in VIP Parser
- SDOCM00086370 [Capture] User-provided scCoeffConfig is not taken into account in createArgs or IOCTL_VPS_CAPT_SET_SC_PARAMS ioctl
- SDOCM00085709 [vipCapture]Clock polarity is not set properly for VIP capture input
- SDOCM00085988 [VIPCapture]FieldMerged capture is not working
- SDOCM00084595 [Display] On-Chip and Off-Chip HDMI modes are not detected on some of the Monitors
- SDOCM00084431 In the SD Display M3 example, THS filter is enabled from M3 during startup but during tear down, the same is not disabled.
- SDOCM00085460 [Scalar] When RAV filter is used, changing scaling factor through RT params results in vertically stretched image
- SDOCM00082421 Dei and scalar driver hangs if the sc coefficients are not loaded.
- SDOCM00081214 [M2M DEI] Different input data formats for each channel is not supported in a handle
- SDOCM00086502 m2m NSF driver create fails - error returned form vpsdrv_m2mNsfChannelCreate function.
- SDOCM00085359 last few slices are missing for NSF subframe.
- SDOCM00085809 [FVID2] Error callback function switches order of appData and errList
- SDOCM00084147 [Event Manager] Channel interrupts are not being enabled
- SDOCM00085665 ProxyServer Implementation has runtime logs turned on by default. This cause issues while connecting via JTAG and debugging.

TI816x

- None

TI816x ES2.0

- None

TI814x

- SDOCM00086053 [Capture]: Driver does not reset whole VIP in case of overflow for TI814x
- SDOCM00086001 [vipCapture]Cable connect/disconnect results in continous overflow
- SDOCM00082548 [Chains] VS Option 5 asserts
- SDOCM00085298 [DC]: Display controller uses incorrect write back client for the frame start event
- SDOCM00083147 [mosaicDisplay App]Clk setting for Dvo2 display is incorrect
- SDOCM00086038 [Mosaic Display] Application is not working for on-chip output on TI814x
- SDOCM00085358 Tridisplay is broken - The SD DAC output is not having chroma on PG2.1 814x VS / VC

Known Issues / Limitations

Common

- **INFORMATION** Please refer TI816x ES1.1, TI816x ES2.0 or TI814x ES2.1 silicon errata for non-software limitations.
- **INFORMATION** Chip level pin mux configuration is done through proxy server binaries assuming VS and VC daughter cards. For other custom boards, pin mux configuration should be overwritten from A8.
- **INFORMATION** NTSC capture through VIP will result in 243 lines per field instead of 240 lines. There is no mechanism to crop this in the VIP. Hence application has to allocate a bigger buffer and ignore the extra lines
- **INFORMATION** Few seconds delay is needed between board power cycle. When power cycle is done very fast, board doesn't get reset properly and hence I2C devices don't respond
- **INFORMATION** For few versions(F,G,H) of TI816x base board we observed that vip clock polarity should be set to falling edge from application, else we see video not getting detected.Yet to root cause this issue.

  :vipPortCfg.pixClkEdgePol = VPS_VIP_PIX_CLK_EDGE_POL_FALLING;
- SDOCM00082578 [Chains] Applications option 7 & 8 - The statistics reported by application indicates good number of frames are dropped by capture for 1080P input. This is due to scalar application limitation. Scalar can process 1 1920X1080 P input real time, in this application we are trying to scale ~ 3 1080P60.
- SDOCM00080591 [Chains] Chains sometimes hangs at IOCTL_VPS_VIDEO_DECODER_GET_VIDEO_STATUS ioctl
- SDOCM00082577 [Chains] Display displays at 30 FPS instead of 60 FPS, for options 1, 2, 3 & 7
- SDOCM00082578 [Chains] Option 2 & 3 Capture reports field drops
- SDOCM00081265 [DCTRL] Enable multiple VENC Simultaneously causing problem
- SDOCM00082779 [Display] One frame delay needed between VENC configuration and SIL9022 encoder start
- SDOCM00078387 [Display]: Mode 1080I is not working on some of the TVs on HDMI output
- SDOCM00082575 [Display] DVO1/DVO2/HD DAC ~2 pixels on the left border of the screen is blanked out (cropped)
- SDOCM00086237 [display] VENC timings are not as per the CEA standards
- SDOCM00082574 [Capture] FID Repetition seen in sample application, provided in the release
- SDOCM00074833 [User Guide] Table of contents missing in HDVPSS user guide
- SDOCM00084444 [m2mSc] Sub-frame scaling output file shows blank first sub-frame when Lazy Loading is enabled

- SDOCM00084823 Fps found is wrong for 480P display mode while running Mosaic Display Sample APP
- SDOCM00084655 [capture] VIP_Parser or inline SC should trim VBLK area in case of discrete sync with active video from TVP7002
- SDOCM00084843 [Capture] Seeing 24ms in periodic mode call back = false
- SDOCM00086751 [Capture]: Resource Allocation fails for RGB input and YUV420+RGB output
- SDOCM00086715 [Vipcapture]Framerate drops when HDMI is connected/disconnected
- SDOCM00086714 [TVP7002]Overflow happens when resolution is changed without stopping capture driver.
- SDOCM00086795 [CSCHal]:CSC HAL asserts for custom coefficients
- SDOCM00086506 [documentation]FVID2_allocBuffer is explained in userGuide but in code its missing

TI816x (ES1.1 and ES2.0)

- SDOCM00080950 [chain] SD display fps is only ~10 fps in chain #8
- SDOCM00074110 [Capture]: ioctl IOCTL_VPS_CAPT_GET_CH_STATUS does not return size of the frame correctly.
- SDOCM00075324 [capture] When TVP5158 is set to CIF, Vps_captPrintAdvancedStatistics() shows 0 fps for even field and 30 fps for odd field
- SDOCM00086092 [Capture TVP5158] VIP detection test case failed for non muxed embedded sync mode for VIP1 Port A/B and ALL instance.
- SDOCM00080161 Display FVID2_start for HDDAC and then HDMI later leads to HDMI output visible but HDDAC output not visible on TV
- SDOCM00075035 [HDVPSS]codes lost in VpsDlm_startStopClients
- SDOCM00081104 [SDVENC] NTSC output level is 10% less than it should be
- SDOCM00082413 [EDE Quality] EDE register settings needs to be fine tuned for sharper image
- SDOCM00075501 [TVP7002]: Brightness from tvp7002 seems to be very low
- SDOCM00084836 [Capture] When inline CSC is used, descriptor reports all fields as even for interlaced input
- SDOCM00084168 [caputreApp]Memory leak while alloc and freeing of frames

TI816x ES 2.0

- SDOCM00084807 [Chains] Lot of FID repeat seen in VS chains for most of the channels in long run
- SDOCM00082781 [Display] SEC1 display on SD VENC hangs for smaller frame size. This is also observed for TI814x ES2.1
- SDOCM00085418 [VESA Display] Hoizontal shift is observed in VESA display through HDDAC (using internal syncs) in TI816x PG2.0

TI814x

- SDOCM00077359 [capture] When TVP5158 is set to mux 4ch CIF mode, VIP overflows during the first field
- SDOCM00081363 [Capture]: Scalar in VIP can cause VIP overflow under high DDR bandwidth on Centaurus PG2.1
- SDOCM00078550 [Capture - TI814X] TVP7002 - 24 Bit Discrete Sync capture doesn't work as expected. Reports wrong width, shaking video. This is a board limitation.
- SDOCM00084050 [CAPTURE]: Centaurus DSS Line Mux mode with 1/2 D1 resolution from TVP5158 is resulting in device hang
- SDOCM00086742 [Capture] VIP Overflows when creating the capture driver in 8 bit discerete sync mode. Can re-cover by applying VIP reset
- SDOCM00082582 [Display] When XDS560 V2 USB emulator is used no output seen on ON-CHIP HDMI & OFF_CHIP HDMI

- SDOCM00082403 [GRPX] Observed flickers in Resource conflict test case for graphics - when mutiple planes GRPX is routed to single display
- SDOCM00082571 [M2M DEI] First frame is shifted down when looking at the TI814x sample application output
- SDOCM00086719 [PLL]Jittter is observed on PLL outputs on Centaurus.

TI814x ES 1.0

- SDOCM00077344: Stenciling feature is not supported in GRPX display driver - Hardware Limitation
- SDOCM00078546: HDMI PLL doesn't get locked on some of Centaurus boards
- SDOCM00077946: [M2M NSF]SNF only and SNF and TNF both bypass modes not working -- HW bug, Fixed in ES2.1 silicon

Validation Information

- This release is validated on TI814x/TI816x EVMs for the above mentioned components.

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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