TI81xx-HDVPSS-01.00.01.32 ReleaseNotes

HDVPSS Version 01.00.01.32

Release Notes
October 14th, 2011

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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

- None

TI816x

- Validated on ES2.0 silicon
  - Validated discrete VSYNC mode of capture
  - Validated VIP parser trimmer feature
  - Validated ACTVID mode of discrete sync capture. Note: This mode can't be used when using inline scaling without the following workaround.
    - For modes using ACTVID that is toggling only during the active video period, trimmer function is needed to drop the last line. Otherwise, some lines will be lost and video shift will occur.
    - For modes using ACTVID that is toggling on all lines, the active video frame can be in-line scaled after ANC lines are trimmed by either VIP_PARSER or SC_M
  - Validated HSYNC mode of discrete sync capture. Note: This mode can't be used when using inline scaling without the following workaround.
    - For inputs with frame_width < 2048 (e.g., 480i/p & 720p, and various VGA modes upto 1680x1050 WSXGA), all modes using HBLANK/HS to capture the whole active video frame can be used in conjunction with the trimmer in the VIP_PARSER or SC_M. But, inputs with frame_width > 2047 (e.g., 1080i & 1080p, QXGA, WUXGA), these modes can not be used.
  - Validated VESA outputs on HDDAC using internal sync signals added in ES2.0
  - Validated ES1.1 silicon issues fixed in ES2.0 (See details in Fixed in this Release section below)
- Added support for the fieldMerged or frame capture for interlaced inputs
- Added support for the Scalar Lazy Loading for Memory to Memory drivers

TI814x

- Bug Fixes

Installation and Usage

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

Upgrade and Compatibility Information

If migrating from 01.00.01.26 release, kindly refer to 01.00.01.27 & 01.00.01.28 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.

- **Platforms** - Added flag to enable/disable I2C probing to reduce the init time. But default this could be set to FALSE. Changed file "$HDVPSS_Install_Dir\packages\ti\psp\platforms\vps_platform.h".

Added `isI2cProbingReq` to structure `Vps_PlatformDeviceInitParams`

- **VipCapture** - Added more enums for discrete sync capture mode (`Vps_CaptVideoCaptureMode`) to support the four different discrete sync mode of VIP. Earlier this was hard coded in the driver depending on platform. Now application has to set proper discrete sync mode depending on the mode supported by the external decoder. To make the application similar to the earlier one, application should select VIP capture mode as `VPS_CAPT_VIDEO_CAPTURE_MODE_SINGLE_CH_NON_MUX_DISCRETE_SYNC_ACTVID_VBLK` and for TVP7002 discrete sync mode, this should be set to `VPS_CAPT_VIDEO_CAPTURE_MODE_SINGLE_CH_NON_MUX_DISCRETE_SYNC_ACTVID_VSYNC` as TVP7002 doesn't support VBLK output.
- **VipCapture** - Added `IOCTL_VPS_CAPT_SET_VIP_CROP_CFG` and `IOCTL_VPS_CAPT_GET_VIP_CROP_CFG` IOCTLs to support VIP parser trimmer feature for TI816x ES2.0 and TI814x ES2.1 silicon.
- **VipCapture** - Added support for the fieldMerged or framecapture mode for interlaced inputs. With this addition, application will be able to capture both fields as a single frame. Application needs to queue buffers for both fields using the single `FVID2_queue` and will get single callback once both fields are captured. Following ioctls are added to support fieldMerged capture.
    - IOCTL_VPS_CAPT_SET_STORAGE_FMT - Field or Frame capture for interlaced input. This IOCTL allows user to capture fields or frames for interlaced input. For frame capture fields can be line interleaved or it can be separate. This IOCTL is only valid for interlaced inputs.
    - IOCTL_VPS_CAPT_GET_STORAGE_FMT - Field or Frame capture for interlaced input. This IOCTL allows user to get status of the storage format For frame capture fields can be line interleaved or it can be separate.

Following data structures are added to support fieldMerged mode of operation.

- Vps_CaptStorageParams - Structure to set the storage format for the fieldMerged or frame capture.
- FVID2_BufferFormat - Enum to set the buffer format for the field Merged mode.

Following is the list of application interface files changed to support the fieldMerged capture.

- `packages/ti/psp/vps/fvid2.h`
- `packages/ti/psp/vps/vps_capture.h`

- **Decoder Interface** - `videoCropEnable` added to `Vps_VideoDecoderVideoModeParams` structure to support TP5158 crop feature which crops 720 to 704 and 360 to 352 for D1/CIF capture input.

- **Display** - Added `Vps_platformSelectHdCompSyncSource` function to select the source signal for the HDCOMP (DAC) sync outputs for TI816x ES2.0.
- **Scalar Lazy Loading for m2m drivers**

Without the Scalar Lazy Loading feature for memory to memory drivers, the user needs to set coefficients for all scalars in the driver instance as per the channel characteristics. When multiple drivers are simultaneously used, this makes programming more complex. By using Lazy Loading, the user does not need to be concerned with this, and can simply enable Lazy Loading, and the coefficient configuration happens automatically internally. Also, for multi-channel scaling, the scaler coefficients and filter type are fixed for the frames being scaled on all channels. Due to this, if frames of different size are provided on the channels, it results in lower quality scaling output. To ensure good quality scaling output, the user is hence required to issue frames one by one and make IOCTL_VPS_SET_COEFFS commands to change the scaling coefficients in between the issued frames. This causes programming complexity. When Lazy Loading is enabled, the driver internally configures the scalar coefficients if required, as per the frame characteristics, when the frames are issued, and the user does not need to configure the coefficients in between frame issues.

Features:

1. Scalar Lazy Loading is supported for memory-to-memory drivers only
    1. SC5: sec0 wb path
    2. SC1 and SC2: DEI path
    3. SC3 and SC4: VIP path
2. The driver internally selects the appropriate scaling coefficients for each frame (channel). If the scaling factor is different from the current scaling factor for that scalar, it internally sets the coefficients before processing the frame.
3. The driver internally selects the appropriate vertical scaling filter (polyphase or running average) for each frame depending on the scaling ratio for that frame. For higher than 1/4 scaling ratio for Vertical scaling, RAV filter is used.
    1. The polyphase filter is used for upscaling for horizontal as well as on vertical side.
    2. For horizontal scaling, decimation filters are internally configured when horizontal scaling factor is less than 1/2.
4. The decision to enable/disable lazy loading is configurable through an IOCTL: IOCTL_VPS_SC_SET_LAZY_LOADING
5. If a scalar is in bypass, then loading any coefficients does not happen for that scalar.
    1. If the src and dest are same, but scalar is not in bypass, the loading of coefficients still happens if there is a difference with previous coefficients.
6. If RT params are provided, the scaling factor configuration accordingly changes, and coefficient configuration may happen if necessary.

Applications:

1. The m2mScMultiChan and m2mDeiScale applications have been updated to add the Lazy Loading IOCTL.
    1. These applications have also been updated to use RT params to have different output sizes for different channels to demonstrate the Lazy Loading feature.
    2. Multi-channel option in the m2mScMultiChan application demonstrates different output frame sizes with Lazy Loading enabled.
    3. In m2mDeiScale application, the value of DEI_NUM_CHANNELS in file M2mDeiScale_test.c can be made 2 to demonstrate Lazy Loading.
    4. In both applications, even for single-channel case, the appropriate scalar coefficients as per the input & output sizes get set in the first iteration. Further iterations do not result in changing scalar coefficients since the

scaling ratio remains the same.

2. The Chains application has been updated to enable Lazy Loading for all scalars.

The following are the interface changes related to lazy Loading:

- IOCTL_VPS_SC_SET_LAZY_LOADING - Enable/disable Scalar Lazy Loading. This IOCTL enables or disables Lazy Loading for the scalar coefficients.
- Following data structure is added to support Scalar Lazy Loading:
  - Vps_ScLazyLoadingParams - Params for the IOCTL_VPS_SC_SET_LAZY_LOADING
    - For drivers having a single scalar in the path, the scalarId field is ignored. For drivers having multiple scalars in the path (e.g. VPS_M2M_INST_MAIN_DEIH_SC1_SC3_WB0_VIP0 or VPS_M2M_INST_AUX_DEI_SC2_SC4_WB1_VIP1), Lazy Loading can be individually enabled or disabled for the scalarId.
    - By default, Scalar Lazy Loading is disabled for all scalars.
    - The IOCTL_VPS_SC_SET_LAZY_LOADING to enable or disable Scalar Lazy Loading for any scalar must not be called when any frames are under processing.
- The Vps_ScCoeffSet enum has been updated to add default coefficient sets for additional scaling factors from 3/16 to 7/16.
  - The enum values have been modified to indicate scaling factor (e.g. VPS_SC_DS_SET_8_16). However, the existing values such VPS_SC_DS_SET_0 have been retained for backward compatibility and shall be eventually deprecated.

Following is the list of application interface files changed to support Scalar Lazy Loading.

- `packages/ti/psp/vps/vps_cfgSc.h.h`
- `packages/ti/psp/vps/vps.h`

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: 3.22.02.27
- BIOS Version: 6.32.01.38
- CG Tool (TMS470) Version: 4.9.0
- IPC: 1.23.01.26

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
- 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
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, 6, 7 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

- SDOCM00084176 Vps_platformDeviceInit (2.5sec) & other API takes ~ 2.8 seconds to complete, which affects the system boot time
- SDOCM00083804 TVP 5158 Audio configuration doesnt handle cascade mode
- SDOCM00083711 [VPDMA HAL] Max frame width and height macro values are wrong
- SDOCM00084135 [Capture]: Capture driver disables chr_ds mux even if it is not used
- SDOCM00084565 [M2M DEI] Descriptor reload size is not set properly in per handle configuration
- SDOCM00083504 [M2M DEI] Field Merge flag should be set to FALSE as this is not used in driver
- SDOCM00084021 [SC Coefficients] Missing Vertical Polyphase Scaling coefficient sets from 3/16 to 8/16 Scaling Factors
- SDOCM00084297 [m2mSc] Validity check for target pitch in VpsMdrvScCheckPerChParams fails for 420SP output format
- SDOCM00084886 [Capture]: Overflow bit is not getting cleared correctly
- SDOCM00084556 [DCTRL] Display controller expects to be scanformat to be filled for the standard mode
- SDOCM00085345 [Scalar] Horizontal scalar must support scaling ratio lower than 1/8
- SDOCM00084699 vpscore_secPath.c needs modification to use memType RT param
- SDOCM00084694 HDVPSS_01_00_01_28/ti/psp/devices/tvp5158/src/vpsdrv_tvp5158I2c.c needs multiple changes
- SDOCM00084691 FPS prints do not show correct values in long run
- SDOCM00084873 [TVP5158] Patch was updated to v2.03.02
- SDOCM00084872 [TVP7002] Updated timing parameters and clock polarity setting

TI816x

- SDOCM00084387 [vipCapture]Wrong FID returned in capture driver for fieldMerged option
- SDOCM00084383 [vipcapture]Queued frames are lost in driver while doing connect/disconnect operation for fieldMerged capture
- SDOCM00084298 [VipCapture]Capturedriver keeps on overwritng last queued frame if it no new frames are queued.
- SDOCM00084129 [vipcapture]It is not possible to switch from fieldMerged to FieldSeparate mode without closing driver
- SDOCM00084090 [vipCapture]Limited Testing done for FieldMerged capture
- SDOCM00085161 [SC Lazy Loading] Scalar driver locks up if the driver is heavily loaded when lazy loading is enabled
- SDOCM00085218 [SC Lazy Loading] Multiple FVID2 handle opens without intermediate FVID2_deInit cause assertions when Lazy Loading is enabled
- SDOCM00085055 [Chains] After running field merge test options the display resolution stays @ 1080p30
- SDOCM00084168 [caputreApp]Memory leak while alloc and freeing of frames
- SDOCM00084444 [m2mSc] Sub-frame scaling output file shows blank first sub-frame when Lazy Loading is enabled
- SDOCM00084087 Enhancement - FBDev should use cleared out pages when inserted for the framebuffer
- SDOCM00084806 Ti816x: FBDEV: GRPX scalar using with Qt app displays wrong image
- SDOCM00078931 [HDVPSS] Bootargs metioned in vpss user guide are wrong

TI816x ES2.0

- SDOCM00071872 Camera removal and re-conection causes VIP parser to lock up
- SDOCM00072462 [Capture] Chr_Ds locks up for 420 1080p60 capture which causes hang of capture.
- SDOCM00075715 [Capture]cable disconnect/connect, extra lines are getting output even though max width x height limit is set to 720x288
- SDOCM00081363 [Capture]: Scalar in VIP can cause VIP overflow under high DDR bandwidth
- Errata Validated: Unable to Reset HDVPSS Through PRCM or Using CLKC Module in DSS
- Errata Validated: VPDMA List Stalls and Hangs When VIP Port is Re-enabled After Disabling With CHR_DS and/or SC and/or CSC Enabled in Non-Mux Mode

TI814x

- SDOCM00083710 [HDVPSS] - Driver should support 422I HD resoultion in some paths in TI814x PG2.1
- SDOCM00082781 [Display] SEC1 display on SD VENC hangs for smaller frame size

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

- 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
- SDOCM00082421 In drivers involving scalars, the scalar coefficient should be loaded before submitting any request to the driver. If not this will result in list lock-up.
- SDOCM00081214 [M2M DEI] Different input data formats for each channel is not supported in a handle
- 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)
- 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
- SDOCM00085359 Last few slices are missing for NSF subframe
- SDOCM00085358 Tridisplay application is broken - The SD DAC output is not having chroma
- SDOCM00084823 Fps found is wrong for 480P display mode while running Mosaic Display Sample APP
- SDOCM00084595 [Display] On-Chip and Off-Chip HDMI modes are not detected on some of the Monitors
- SDOCM00084557 [Capture]: Continuous overflow in VIP Parser
- SDOCM00083147 [mosaicDisplay App]Clk setting for Dvo2 display is incorrect
- 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

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
- 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

- SDOCM00085420 [Capture] Chains and capture sample application doesn't work on TI814x VS board
- 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.
- SDOCM00082403 [GRPX] Observed flickers in Resource conflict test case for graphics - when mutiple planes GRPX is routed to single display
- SDOCM00082548 [Chains] VS Option 5 is not functional. Asserts with out of memory exception.
- SDOCM00082582 [Display] When XDS560 V2 USB emulator is used no output seen on ON-CHIP HDMI & OFF_CHIP HDMI
- SDOCM00084050 [CAPTURE]: Centaurus DSS Line Mux mode with 1/2 D1 resolution from TVP5158 is resulting in device hang

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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