Vision Software Development Kit

Version 03.00.00

Release Notes
July 2017

Contents

IMPORTANT NOTES: <MUST READ>

- *VSDK folder structure has been modified. Kindly refer VisionSDK_Getting_Started_Guide.pdf for details.*
- *VSDK build flow has been modified to improve the build time, see the VisionSDK_UserGuide_BuildSystem.pdf for details.*
- *To ensure binary compatibility with older AppImage, ensure the following in sbl_lib_config_tda3xx.h & rebuild*

  SBL_LIB_CONFIG_DISABLE_AMMU = 1

  SBL_LIB_CONFIG_DISABLE_UNICACHE = 1
- *For OpenCV and OpenCL, this is a preliminary release with limited testing (Alpha Quality).*
- *UART3 support has been removed from TDA2x(J6)Rev H board*
- *CCS version 6.0.1.00040 or higher should be used along with vision SDK 2.10 release.*
- *OV10640P sensor support is discontinued, OV10640 Rev E is supported over CSI2*
- *BSP / Starterware is merged into single package – PDK Any reference to BSP/Starterware in the documentation refers to PDK.*

Build ID: 03.00.00.00

IMPORTANT NOTE: Vision SDK by default supports the TDA2xx, TDA3xx & TDA2Ex super set device configuration. Please refer to the Device Data Manual to know the details of the CPUs supported in that part. Vision SDK supports selecting only the CPUs available for the specific part.

Major New Features in the Release

New features in the release vs previous Vision SDK release are:

1. Vision SDK restructuring.
    a. PDK Integration with Vision SDK.
    b. SDK Framework and application separation.
2. TDA2ex (17x17) support.
3. Car black box demo usecase on Linux on TDA2ex (23x23, 17x17)
4. TI Deep Learning File Input/Output use case.
5. New surround view demos:
    a. AVB Ethernet based Surround View on TDA2x and TDA2Ex (23x23, 17x17)
    b. 2D SRV Support (UB964 & 4 modules of SAT0088) on TDA2Ex and TDA2Ex 17x17
    c. 2 MP (OV2775) Surround view demo on TDA2xx.
    d. Dynamic bowl creation in 3D surround view on TDA2x.
    e. DSP CPU load optimization using SIMD.
    f. 3D SRV with UB96x on TDA2Ex (17x17).
6. Open VX Framework support on BIOS and Linux.
7. Phase 2 of Open CV with DSP acceleration.
8. Synchronization of cameras in UB964.

Installation and Usage (BIOS ONLY)

- Kindly refer user guides \vision_sdk\docs\UserGuides\VisionSDK_UserGuide_TDAxxx.pdf

Example use-cases (BIOS ONLY)

- Vision SDK demonstrates use-cases as examples. Below table lists these usecases and also indicates the SOC/Platform it is validated on.

No.	Usecases	TDA2xx EVM	TDA2Ex EVM	TDA3xx EVM

Single Camera Use-cases				
1.	1CH VIP capture + Display	YES	YES	YES
2.	1CH VIP capture + Alg Frame Copy (DSP1) + Display	YES	YES	YES
3.	1CH VIP capture + Alg Frame Copy (EVE1) + Display	YES	NO	YES
4.	1CH VIP capture + Alg Frame Copy (A15) + Display	YES	YES	NO
5.	1CH VIP capture + Edge Detect (EVE1) + Display	YES	NO	YES
6.	1CH VIP capture + Dense Optical Flow (EVEx) + Display (HDMI)	YES	NO	YES[1]
7.	1Ch VIP capture + Sparse Optical Flow (EVE1) + Display	YES	NO	YES
8.	1CH VIP capture + Alg Subframe Copy (EVE1) + Display	YES	NO	YES
9.	1CH VIP capture + DSSWB + CRC + Display	NO	NO	YES
10.	1CH VIP capture + ENC + DEC + VPE + Display	YES	YES	NO
11.	1CH VIP capture (HDMI) + Lane Detect (DSP1 + EVE1) + Display	YES	YES	YES
12.	1CH VIP capture (HDMI) + SOF (EVE1) + SFM (DSP1) + Display	YES	NO	YES
13.	1CH VIP capture (HDMI) + Traffic Light Recognition (TLR) (DSP1) + Display	YES	YES	YES
14.	1CH VIP capture (HDMI) + Pedestrian, Traffic Sign, Vehicle Detect 2 (EVE1 + DSP1) + Display	YES	NO	YES
15.	1CH VIP capture (HDMI) + FrontCam Analytics 2 (PD+TSR+VD+LD+TLR+SFM) (DSPx, EVEx) + Display (HDMI)	YES	NO	YES
16.	1CH VIP capture + QM Alg Frame Copy with FFI (DSP1) + Display	YES	YES	YES
17.	1CH VIP capture + QM Alg Frame Copy with FFI (EVE1) + Display	NO	NO	YES
18.	1CH VIP capture + Safe Frame Copy (A15) + Display	YES	NO	NO
19.	1CH VIP capture + DisplayMultiPipe + DSSWb + Metadata	NO	NO	YES
OpenCV Use-cases				
19.	1CH VIP capture + OpenCV Canny (A15) + Display	YES	NO	NO
20.	1CH VIP capture + OpenCV OpenCL Dilation (A15 + DSP) + Display	YES	NO	NO
OpenCL Use-cases				
21.	1CH VIP capture + Frame Copy (A15) + Display	YES	NO	NO
22.	1CH VIP capture + Canny Edge (DSP1) + Display	YES	NO	NO
Multi-Camera LVDS Use-cases				
23.	4CH VIP Capture + Mosaic Display	YES	YES	NO
24.	4CH VIP Capture + Surround View (DSP) + Display (HDMI) (TDA2x & TDA2Ex ONLY)	YES	YES	NO
25.	5CH VIP Capture + Surround View (DSPx) + Analytics (DSP/EVE) + Ultrasound (DSPx) + HDMI Display (HDMI) (TDA2x ONLY)	YES	NO	NO
26.	4CH VIP Capture + Surround View (DSPx) + Display (HDMI) (TDA3x ONLY)	NO	NO	YES
27.	2CH VIP Capture (2560x720) + Surround View (DSPx) + Display (TDA2x + TIDA0455 only)	YES	NO	NO
28.	Surround View Calibration	YES	YES	NO
29.	OV10635 & UB964 4CH CSI2 Capture + Display (TDA2Ex only)	NO	YES	NO
AVB RX Use-cases, (TDA2x ONLY)				
30.	4CH AVB Capture + Decode + VPE + Sync + Alg DMA SW Mosaic (IPU1-0) + Display (TDA2x & TDA2Ex ONLY	YES	YES	NO

31.	4CH AVB Capture + Surround View (DSPx) + Display (HDMI) (TDA2x & TDA2Ex ONLY)	YES	YES	NO
Dual Display Use-cases, (TDA2x EVM ONLY)				
32.	1CH VIP capture + Dual Display	YES	NO	NO
33.	2CH LVDS VIP capture + Dual Display	YES	NO	NO
ISS Use-cases, (TDA3x ONLY)				
34.	1CH ISS capture + ISS ISP + ISS LDC+VTNF + Display	NO	NO	YES
35.	4CH ISS capture + ISS ISP + Simcop + Surround View (DSP1) + Display	NO	NO	YES
36.	1CH ISS capture (AR0132) + ISS ISP Monochrome + Display	NO	NO	YES
37.	3D SRV 4CH ISS capture + ISS ISP + DeWarp + Synthesis (DSP1) + Display	NO	NO	YES
38.	Surround View Calibration	NO	NO	YES
39.	3D + 2D SRV 4CH ISS capture + ISS ISP + DeWarp + Synthesis (DSP1) + Display	NO	NO	YES
40.	SRV 4CH ISS capture + ISS ISP + DeWarp + Synthesis (DSP1) + RearView + Display	NO	NO	YES
Other Use-cases				
41.	File IO using MMCSD	YES	NO	YES

[1] Only EVE1 is used in TDA3xx

SDK Features (BIOS ONLY)

- Support the following SoC/Platforms
  - TDA2x SoC PG1.0/PG1.1/PG2.0 EVM
  - TDA3x SoC PG1.0/PG1.0A/ PG2.0 EVM
  - TDA2Ex SoC PG1.0/PG2.0 (23x23, 17x17) EVM
- Support for all CPU's in the TDA2xx Device (IPU1-0, IPU1-1, IPU2, DSP1, DSP2, EVE1, EVE2, EVE3, EVE4, A15-0)
  - Single-channel Capture via VIP for OV10635 sensor, HDMI receiver
  - Multi-channel Capture (via VIP with LVDS, via Ethernet with AVB)
  - Dual Display and Display Controller for VENCs (LCDx and On-Chip HDMI)
  - Single-channel DSS Write Back Capture
  - VPE (Scalar), Encode (MJPEG/H264), Decode (MJPEG/H264)
  - Stripe based capture – support for OTF processing
  - Dual A15 support (SMP BIOS mode)
  - 4CH OV10635 capture via UB960/OV490/TIDA00455 to support for Low cost surround view on TDA2xx
  - Support for creating Image pyramid using VPE.
  - Support for TDA2xx secure boot on HS samples.
  - TI Deep Learning File Input/Output use case.
- Support for all CPU's in the TDA3xx Device (IPU1-0, IPU1-1, DSP1, DSP2, EVE)

- Single-channel Capture via VIP for OV10365 sensor, HDMI receiver
- Multi-channel Capture (via VIP with LVDS)
- Capture via ISS CAL OV10640 Rev E (CSI2), AR132 (Parallel), AR140 (parallel), IMX224 (CSI2)
- ISS M2M-ISP & ISS M2M-SIMCOP Links
- Single Display and Display Controller for VENCs (LCD, SD VENC (NTSC/PAL) and Off-Chip HDMI.
- ISS Image tuning tool (DCC – Dynamic Camera Configuration), AWB, AE library
- Tuned AR140, OV10640 Rev E, IMX224 with WDR
- Multiple channel processing support for ISS CAPTURE and ISS M2M-SIMCOP Links.
- Fast boot mode which allows capture-display to bring up first without DSP and EVE.
    - Seamless switch to Object Detect usecase after DSP and EVE are up
- Frame freeze detect using display write back & HW CRC
- 4CH AR140 CAL CSI2 capture via UB960 CSI2 Hub for Low cost surround view.
    - With HW LDC support for distortion correction.
- RTI configuration, expiry detection and recovery.
- 3D Surround View on TDA3x with HW LDC
- Enhancements to TDA3xx 3D surround view.
    - Support for single pass WDR.
    - Improved imaging for SRV with Improved AE stability & Photometric alignment
    - Support for 3D SRV: 360 Degree Flyaround.
    - Support for lens type distortion table in SD card
- New Algo Link “DeWarp” primarily used for multiple channel LDC correction.
- Support to add various tap-points for dumping the frames in different points in the ISS ISP frame processing.
- Support for creating Image pyramid using ISS.
- Support added for RVP.
- Added split screen 2D + 3D Surround View with HW LDC for 3D & DSP LDC for 2D
- AR0132 Image Tuning, enabled with 2A and WDR
- Support for TDA3xx secure boot on HS samples
- Support 128MB DDR 3D SRV on TDA3xx
- 3D SRV + Rear view with lane marking and marking movement based on vehicle movement

- Support for all CPU’s in the TDA2Ex 23x23 and 17x17 (J6 Entry) Device (IPU1-0, IPU1-1, DSP1, A15-0)

    - Single-channel Capture via VIP for OV10365 sensor
    - Multi-channel Capture (via VIP with LVDS)
    - Display and Display Controller for VENCs (LCD and On-Chip HDMI)
    - VPE (Scalar), Encode (MJPEG/H264), Decode (MJPEG/H264)
    - CSI2 capture support, 4ch capture (CSI2) + Display with channel switching (YUV) on TDA2Ex
    - 2D SRV Support (UB964 & 4 modules of SAT0088) on TDA2Ex and TDA2Ex 17x17
    - Capture & Display usecase with UB9640 & 4 modules of SAT0088 on TDA2Ex and TDA2Ex 17x17
- IPU2 (SMP mode) support
- All SoC supports Links Such as Dup, Merge, Select, Sync, NullSrc, Null and IPC (In/Out).
    - Gate Link – Gives selective control to application on part of usecase data flow.
        - Typical usecases - power management, boot time optimizations
    - Split Link (TDA2xx only) – Allows single video buffer of higher resolution to be split into multiple channels of lower resolutions on same output queue.
        - Typical usecase - surround view using OV490 on TDA2xx.
    - Display module supporting multiple display sync'd pipes
- Algorithm link with algorithm plug-in's support on all CPU's
- Front Cam (EU-NCAP) use-case – OD, SFM, FCW, TLR, OC (Object Classification)
- Integrated below TI algorithms (sample reference algorithms only)
    - Pedestrian Detection
    - Traffic Sign Recognition
    - Lane Detection
    - Sparse Optical Flow
    - Dense Optical Flow
    - Edge Detection
    - Structure from Motion
    - Traffic Light Detection
    - Forward Collision Warning
    - Object Classification.
    - Stereo (xCAM ONLY)
    - 2D Surround View
        - AVB Ethernet based Surround View on TDA2x and TDA2Ex (23x23, 17x17)
        - 2D SRV Support (UB964 & 4 modules of SAT0088) on TDA2Ex and TDA2Ex 17x17
        - 2 MP (OV2775) Surround view demo on TDA2xx.

    - 3D Surround View (Linux + BIOS Vision SDK ONLY)
        - Dynamic bowl creation in 3D surround view on TDA2x.
        - 3D SRV with UB96x on TDA2Ex (17x17).
- Support for Safety features and Freedom From Interference (FFI).
    - Support for Firewalls in L3, XMC, ECC, CRC (HW CRC TDA3xx only), TeSOC (TDA3xx only), RTI (TDA3xx only), DCC(TDA3xx only), ESM (TDA3xx only), MPU (Memory Protection Unit).
    - Support for SafeIPC in Vision SDK.
- Enhanced sensor framework to support easy integration of new sensors
- System and Local EDMA support on all cores
- TCP/IP support via NDK/NSP on IPU1-1 (TDA2xx, TDA3xx, TDA2Ex), A15-0 (TDA2xx,TDA2Ex)
- Support for TFDTP stack on IPU1-1 (TDA2xx, TDA3xx, TDA2Ex), A15-0 (TDA2xx,TDA2Ex)
- Support for FAT File system with MMC/SD card. (Note: When networking is enabled, FAT FS is disabled)
    - Usecase present for NullSrc with File read
- Support Auto use-case generation tool. Refer VisionSDK_UsecaseGen_Overview.pdf & VisionSDK_UsecaseGen_UserGuide.pdf under docs folder for details.
- Low latency IPC support in VSDK to reduce the CPU load and latency
- Power Management
    - CPU idle (A15 – Retention, M4 – Auto Clock Gate, DSP – Auto Clock Gate, EVE – Auto Clock Gate) & Temperature measurement support.
    - Thermal management Limp Home Mode demonstration in Front Cam (EU-NCAP) use-case.
    - Demonstration of DSP and EVE to power domain off and reboot for analytics standby low power state in TDA3xx Fast Boot use case.
    - Ability to measure the Actual time for which the CPU was in low power.
    - Ability to measure the power drawn by different voltage rails from on board INA226 on TDA2xx.
- Links framework, BSP/Starterware drivers modified to support optional static memory allocation (Refer VisionSDK_DevelopmentGuide.pdf for more details).
- Synchronization of cameras in UB964
- Debug and Instrumentation Framework
    - Performance log (FPS, CPU Load, Heap memory usage)
    - Debug log (exception log, assert log)
    - DDR BW statistics via HW statistic collectors
    - PRCM status and reading clock frequencies of different modules.

    - Reading Voltage values of different device voltage rails from PMIC.
    - Link statistics logic updated to get link statistics and CPU status without sending command to remote core.
- Multiple boot mode support
    - TDA2x EVM: QSPI boot, SD boot, NOR boot, CCS boot
    - TDA3x EVM: QSPI boot, QSPI+SD boot (SBL in QSPI, AppImage in SD card), CCS boot
    - TDA2Ex EVM: QSPI boot, SD boot, NOR boot, CCS boot
    - TDA2x xCAM: QSPI boot, SD boot, CCS boot
    - TDA3x RVP: QSPI+SD boot (SBL in QSPI, AppImage in SD card), CCS boot
- GEL installation package has changed
    - New package and installation methods are available at: http://processors.wiki.ti.com/index.php/Device_support_files
- VisionSDK with BIOS on A15 supports only 512MB configuration
    - This needs update to GEL files. Refer to SoC specific user-guide for details.
- Support for improved auto-calibration for 2D and 3D surround view.
- Improved build time and build process
- Open CV Support for A15 host (Bios) with DSP acceleration.
- Open CL Support for A15 host (Bios) with offloading algorithms to DSP.
- Open VX Framework support on BIOS and Linux.

Example use-cases (Linux + Bios)

- Vision SDK demonstrates use-cases as examples. Below table lists these usecases and also indicates the SOC/Platform it is validated on.

No.	Usecases	TDA2xx EVM	TDA2Ex EVM	TDA3xx EVM
Single Camera Use-cases				
1	1CH VIP capture + SGX Copy + DISPLAY	YES	YES	NO
2	1CH VIP capture + Encode + Decode + SGX Copy + DISPLAY	YES	YES	NO
5	NullSrc + Decode + Display (Only 1920x1080 H264/MJPEG Video Input Bit-Stream Supported)	YES	YES	NO
6	1CH VIP capture + Alg Frame Copy (A15) + SGX Copy + DISPLAY	YES	YES	NO
7	1CH VIP + Alg Frame Copy (A15) + Connector Links (Dup, Merge, Select, Gate on A15) + SGX Copy + DISPLAY	YES	YES	NO
OpenCV Use-cases				
8	1CH VIP capture + OpenCV Canny (A15) + SGX Copy + DISPLAY	YES	NO	NO
9	1CH VIP capture + OpenCV OpenCL Dilation (A15 + DSP) + SGX Copy + DISPLAY	YES	NO	NO
OpenCL Use-cases				
10	1CH VIP capture + OpenCL Copy (A15->DSP) + SGX Copy + DISPLAY	YES	NO	NO
Multi-Camera LVDS Use-cases				
11	4CH VIP LVDS capture + SGX MOSAIC + DISPLAY	YES	YES	NO
12	4CH VIP LVDS capture + 3D SRV (SGX/A15) + DISPLAY - Only HDMI 1080p display supported	YES	YES	NO
13	4CH VIP LVDS capture + 3D SRV + 4CH SfM (3D perception demo - EVE1-4/DSP1&2) + DISPLAY - Only on TDA2xx with HDMI 1080p display	YES	YES	NO
14	2CH OV490 2560x720 capture + Split + 3D SRV (SGX/A15) + DISPLAY - Only HDMI 1080p display supported	YES	YES	NO
15	Surround View Calibration	YES	YES	NO
16	4CH CSI2 CAL capture + 3D SRV (SGX/A15) + DISPLAY - Only HDMI 1080p display supported	NO	YES	NO
17	CSI2 CAL Surround View Calibration	NO	YES	NO
AVB RX Use-cases, (TDA2x ONLY)				
18	4CH AVB Capture + Decode + SGX MOSAIC + DISPLAY	YES	YES	NO

SDK Features (Linux + Bios)

- Compatible with Processor SDK Linux version 3.02
- Linux on A15 (4.4 kernel) & BIOS on all other cores
- Support for IPU2 as the main IPU core.
- Support the following CPU's in the TDA2xx system (IPU2, IPU1-0, DSP1, DSP2, EVE1, EVE2, EVE3, EVE4, A15-0)
    - IPU2 and IPU1 in SMP mode support
    - Support display only on M4 (Bios) for TDA2xx, TDA2Ex and TDA2Ex 17x17.

    - Single-channel Capture via VIP for OV10365 sensor
    - Multi-channel Capture (via VIP with LVDS, via Ethernet with AVB)
    - VPE (Scalar), Encode (MJPEG/H264), Decode (MJPEG/H264)
    - New usecase demonstrating 3-D perception.
    - IPU1 based EVE loader
    - Improved 3D SRV with auto-calibration using SGX (Open-GL Algo) for creating the “360 degree view of the car with virtual camera motion” is integrated
    - AVB and NDK support on IPU2 when A15 is running Linux
    - This release supports Rev-E and higher versions of TDA2xx EVM only
- Support the following CPU’s in the TDA2Ex system (IPU2, IPU1-0, DSP1, A15-0)
    - Single-channel Capture via VIP for OV10365 sensor
    - Multi-channel Capture (via VIP with LVDS)
- VPE (Scalar), Encode (MJPEG/H264), Decode (MJPEG/H264)
- New usecase added for NullSrc with File read from SD card or NFS
- sgxFrmcpy, sgx3Dsrv, sgx3Dsfm, Algorithm link and other connector links (Dup, Merge, Select, Sync, Gate, NullSrc, Null and IPC (In/Out) ported to A15 Linux
- Inter processor communication framework infrastructure between A15 running Linux and other cores running BIOS,
- Basic SGX/OpenGL support - SGX link on A15 can be used to render/texture the video frames
- Support GPU off-screen rendering using EGL PixMap and IPU allocated buffers
- Auto use case generation tool (same as BIOS only Vision SDK)
- Debug and Instrumentation Framework (same as BIOS only Vision SDK)
- EVE loader updated to use SBL Lib and PM Lib.
- Support for common links on the Linux side for VSDK Linux and InfoAdas.
- Support for IPUMM along with Vision SDK on single IPU core
- Open CV Support for A15 host (Linux) with offloading algorithms to DSP with more DSP kernels.
- AVB based 3D SRV demo on both TDA2x, TDA2Ex & TDA2Ex 17x17
- TDA2Ex CSI2 based 3D SRV with UB964 & 4 modules of SAT0088 on TDA2Ex & TDA2Ex 17x17
- Car Black Box support on TDA2Ex & TDA2Ex 17x17
- InfoADAS CMEM, Android/QNX supported on TDA2x
- Open CL Support for A15 host (Linux) with offloading algorithms to DSP.
- This release doesn’t support late attach & error recovery features supported by remoteproc module

Installation and Usage (Linux + Bios)

- Kindly refer \vision_sdk\docs\Linux\VisionSDK_LinuxUserGuide.pdf

Component Versions

The versions of the different components included in Vision SDK Release Package can be referred to “vision_sdk\docs\VisionSDK_3_00_00_00_manifest.html”.

Validation Hardware

This software package is tested with the below hardware

- **TDA2xx EVM**
  - Single Camera use-cases: Vision Application Board + OV10635 sensor or HDMI capture + LCD or HDMI display
  - LVDS Multi Camera use-cases: Vision Application Board + De-serializer board + 4~5xSerializer board + 4~5x OV10635 sensor + LCD or HDMI display
  - AVB Multi Camera use-cases: Vision Application Board + HDMI display + AVB talker (on Linux on PC)

- **TDA3xx EVM**
  - Single Camera VIP use-cases: OV10635 sensor or HDMI capture + LCD or SDTV or HDMI display
  - LVDS Multi Camera use-cases: De-serializer board + 4xSerializer board + 4x OV10635 sensor + SDTV display
  - Single Camera ISS use-cases: OV10640 Rev E(CSI2) or AR0132 (Parallel) sensor + LCD or SDTV or HDMI display
  - Surround view use-case: Requires UB960 EVM with 4 TIDA00262 camera modules and HDMI Display

- **TDA2Ex & TDA2Ex 17x17 EVM**
  - Single Camera use-cases: Vision Application Board + OV10635 sensor + HDMI display
  - LVDS Multi Camera use-cases: Vision Application Board + De-serializer board + 4xSerializer board + 4x OV10635 sensor + HDMI display

- **Boot mode Supported**
  - TDA2x EVM: QSPI boot, SD boot, NOR boot, CCS boot
  - TDA3x EVM: QSPI boot, QSPI+SD boot (SBL in QSPI, AppImage in SD card), CCS boot
  - TDA2Ex (23x23, 17x17) EVM: QSPI boot, SD boot, NOR boot, CCS boot

Refer user guide for exact board number and revision that this release is validated with.

SW Quality – Status

Software Component	System Testing	MISRA - C *	Static analysis	Quality / Safety
SBL	Yes	Yes	Yes	QM
CSL/FL / StarterWare	Yes	Yes	Yes	QM
BSP / Drivers	Yes	Yes	Yes	QM
EVE SW	Yes	Yes	Yes	QM
VXLib (C66x)	Yes	Yes	Yes	QM
NDK / NSP / AVB	Yes	Yes	Yes	QM
IVAHD codecs	Yes	No	Yes	QM
EDMA LLD	Yes	Yes	Yes	QM
Framework Components	Yes	Yes	Yes	QM
BIOS	Yes	Yes	Yes	QM
BIOS-IPC	Yes	Yes	Yes	QM
IPCLib	Yes	Yes	Yes	QM
Links Framework‡	Yes	Yes	Yes	QM
AutoSAR MCAL	Yes	Yes	Yes	ASIL – B

‡ Vision Software Development Kit (Vision SDK) is broadly divided into

- **Core SDK Framework (links_fw)**
  - Core SDK – Contains Links and Chain Framework for both Bios and HLOS
  - SW quality processes like MISRA-C/KW static checker etc. are done only for links framework
- **Demo Application (apps)**
  - Demo applications to validate VSDK FW
  - SW quality processes like MISRA-C/KW static checker etc. are NOT done for apps and sample_app

Compilers	Production ready	Compiler Qualification Kit
EVE TI compiler	Yes	Available from TI
ARM M4 compiler	Yes	Available from TI
C66x TI compiler	Yes	Available from TI
ARM A15 compiler	Yes	3P

Bugs Fixed In This Release

Defect ID	Defect Description
ADASVISION-1254	TFDTP failing on A15
ADASVISION-1252	OV10640 Generate DCC generates ov10640_dcc.h with incorrect macro name
ADASVISION-1251	Incorrect sensor settings in AE
ADASVISION-1250	TDA2x UG - some issues with Nor flash section - "3.7 load using NOR"
ADASVISION-1249	Ethernet Flash does not work correctly
ADASVISION-1248	[TDA3xx RVP] Not able to build SBL
ADASVISION-1247	Network tools binaries not updated for Linux
ADASVISION-1245	TFDTP Rx link not working on TDA3xx
ADASVISION-1244	VSDK depend fails when +CAL_INCLUDE=no
ADASVISION-1242	make clean doesnt remove few config files and libraries binaries
ADASVISION-1241	DCC XMLs stored in incorrect format
ADASVISION-1240	Not able to build SBL from VSDK with command prompt
ADASVISION-1239	UG documentation issues/feedback from Ficosa
ADASVISION-1238	RC5 binaries with TDA3x & OV10640 - dcc_xmls don’t get parsed and give out errors
ADASVISION-1237	RC5 binaries with TDA3x & OV10640 - autocalibration usecase hangs
ADASVISION-1236	RC5 binaries with TDA3x & OV10640 - Images are too dark
ADASVISION-1235	[TDA2x] Not able to boot with RC5 binaries
ADASVISION-1233	[TDA3x] 2 lines for embedded metadata is seen on top for AR132 sensor
ADASVISION-1232	IP Address does not come up after SBL Change in TDA2xx ES1.0 REV E
ADASVISION-1230	Sample_app hlos build failed
ADASVISION-1228	[TDA2Ex] CSI2 CAl CAL capture is not working
ADASVISION-1227	[TDA2Ex] Network ctrl cmd is not working
ADASVISION-1226	windows build fails on some machines, even with GIT BASH
ADASVISION-1223	git checkout tag for gdbc6x is wrong in Linux UG
ADASVISION-1222	insmod: ERROR: could not load module while running "load_ocl_kos.sh" script
ADASVISION-1219	DATA VIS build failed
ADASVISION-1218	IPC LIB build failed when IPU2 included
ADASVISION-1217	Video received at avb listner in PC has a green strip in bottom
ADASVISION-1216	AVB usecase on Linux not working
ADASVISION-1215	No error/message displayed if number of input channel in avb usecase is greater than 4.
ADASVISION-1213	File io usecase hangs in tda2ex/jtda2ex 17x17
ADASVISION-1212	[TDA2x] Assert observed for nw UCs running withTCP/IP on A15
ADASVISION-1211	IP acquisition fails on TDA3x 2.0 EVM
ADASVISION-1210	CPU load for all enabled core is not shown for sample App

ADASVISION-1209	Fast Boot usecase is not working on VSDK3.0 RC1
ADASVISION-1208	VSDK AVB RX link MISRA in defer state
ADASVISION-1206	Linux installer info is missing from all user guides
ADASVISION-1204	OSA_memFreeSR in Linux side can corrupt memory in M4 or other CPU
ADASVISION-1203	Invalid logic in alignment in utils_mem.c
ADASVISION-1202	Incorrect Display MFLAG threshold registers are used in utils_common
ADASVISION-1198	TDA3x CSI SRV calibration not working
ADASVISION-1197	2MP SRV will not work with default LENS.BIN
ADASVISION-1196	OpenCL cannyedge UC is not working
ADASVISION-1194	Linux OpenCL frame copy usecase failng to parse built opencl kernel at runtime

Known Issues / Limitations

Module	Description	Workaround	Frequency of Occurrence	CQ ID
VSDK	Network Tx throughput issue	Use TFDTP	Always	ADASVISION-1175
PC tool	TFDTP receive with windows PC packet drop issue	Use Linux PC	Random	ADASVISION-1182
VSDK	IMX224 output is overexposed	None	Always	ADASVISION-1152
VSDK	Video freeze observed (2/10 times) on running Linux OpenCV Canny UC	None	Random	ADASVISION-1221
VSDK	Network Rx with YUV422 1280x960 fails after some time	Use TFDTP	Always	ADASVISION-1176
VSDK	RTI Use case is not working on TDA3xx EVM	None	Always	ADASVISION-1220

Refer also to BSP / Starterware /InfoAdas Release Notes for additional known issues

Compatibility Info

This section contains information about compatibility of APIs between this release and 02.12.00.00

NOTE: It is recommended to recompile the user created use-cases, alg plugins, links against the new release interface files even if no code level change is required in the user application.

Link API

Module	Interface file	Change in user application required	Change details
Alg Link	algorithmLink.h	No	Addition of Surround view SFM, driver monitoring, stitching, adaptive bowl, TIDL and OpenVX. Change not influencing Processor SDK Radar
Alg Link	algorithmLink_rvcDiagnostics.h	No	[Moved to apps/include/alglink_api]
Alg Link	algorithmLink_swCrc.h	No	[Moved to apps/include/alglink_api]
AVB Rx Link	avbRxLink.h	No	Misra C Fixes
AVB Tx Link	avbTxLink.h	No	[New File] AVB Tx Link acts as IEEE 1722 listener and sends MJPEG/H264 video frames or metadata frames in AVB IEEE 1722 compliant format. In a typical.
Graphics Link	grpxSrcLink.h	No	Addition of stero calibration display and rear view panaroma parameters.
ISS ISP Configuration Link	issIspConfiguration.h	No	Adapting to PDK include paths.
ISS Simcop Configuration Link	issM2mSimcopLink.h	No	Adapting to PDK include paths.
Network Control Link	networkCtrl_if.h	Yes	Update to network port numbers.
Null Source Link	nullSrcLink.h	No	Support for restart file read parameters, EOF callback and pause read options.
OpenCL Link	openclLink.h	No	[New File] OpenCL link is used to connect to the OpenCL monitor is the DSP.
SGX SFM Link	sgx3DsfmLink.h	No	[New File] Sgx3Dsfm Link is used to display maps/objects using SGX. The rendered output will be pushed to display via DRM.
SGX SRV Link	sgx3DsrvLink.h	No	[New File] Sgx3Dsrv Link is used to feed video frames to SGX for creating the surround view (360 degree view) of the Car. The rendered output will be pushed to display via DRM.
SGX FRMCOPY Link	sgxFrmcpyLink.h	No	[New File] SgxFrmcpy Link is used to feed video frames to SGX for rendering.
System Link	system.h	No	Adapting include paths to modified SDK structure.
System Common	system_common.h	No	Added common main support and system API initialization and de-initialization links.
System Constant	system_const.h	No	Buffer alignment of RTOS applications made to 32.

System Link IDs	system_linkId.h	No	Support for multiple Null, Select, ISS M2M Simcop links. Support for AVB_Tx, Lidar, dump, IMU links.
System Trace	system_trace.h	No	Adapting include paths to modified SDK structure.
System vring config	system_vring_config.h	No	Unified the IPC Vring buffers.
System Link Common	systemLink_common.h	No	Support Global time structure and commands to read the global time using the system commands.
Ultrasonic Capture Link	ultrasonicCaptureLink.h	No	[New File] Capture data from ultrasonic sensors connected via UART. Sends measurement info to next link.

Utils API – This API is used by users when writing an algorithm plugin or use-case or link

Module	Interface file	Change in user application required	Change details
UTILS	network_api.h	No	Adapting include paths to modified SDK structure.
UTILS	network_tfdtp_api.h	No	Adapting include paths to modified SDK structure.
UTILS	utils.h	No	Adapting include paths to modified SDK structure. Support to read the global timer counters.
UTILS	utils_buf.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_buf_ext.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_cbuf_ocmc.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_dma.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_eveloader.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_idle.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_ipc_que.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_iss.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_l3_emif_bw.h	No	Adapting include paths to modified SDK structure. Added API to set the Bandwidth regulators.
UTILS	utils_link_stats_if.h	No	Adapting include paths to modified SDK structure. Increased the link statistics instances to 145.
UTILS	utils_mbx.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_mem.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_mem_cfg.h	Yes	Removed hardcoding of heap and buffer sizes.
UTILS	utils_mem_debug.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_pm.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_prcm.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_prcm_stats.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_prf.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_que.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_stat_collector.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_temperature.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_timer_reconfig.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_tsk.h	No	Adapting include paths to modified SDK structure.
UTILS	utils_vip_interrupt.h	No	Adapting include paths to modified SDK structure.