

StarterWare 01.02.05.08

Release Notes

Applies to Product Release: 01.02.05.08

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1. Overview

This document is the **Release notes** of the ADAS StarterWare package. StarterWare release provides no-OS platform support for TI's series of ADAS specific SoCs TDA1Mxx, TDA2xx, TDA2Ex and TDA3xx. The StarterWare package contains Device Abstraction Layer libraries and peripheral/board level sample/demo examples that demonstrate the capabilities of the peripherals on TDA1Mxx, TDA2xx, TDA2Ex and TDA3xx SoCs.

TDA1Mxx device family is a derivative of TMS320DM8148 that supports Advanced Driver Assistance Systems (ADAS) applications. For more information about the TDA1Mxx device family, please contact your local TI sales representative. For more information about TMD320DM814x, please visit <http://www.ti.com/product/tms320dm8148>.

TDA2xx and TDA2Ex are high-performance, automotive vision application devices based on enhanced OMAP™ architecture integrated on a 28-nm technology. The architecture is designed for Advanced Driver Assistance applications, including Vision Analytics for Single/Dual Front Camera, LVDS/Ethernet Surround View, Night Vision, Blind Spot Detection, Sensor Fusion and LIDAR, among others, and best-in-class CPU performance, video, image, and graphics processing sufficient to support:

- Streaming video up to full high definition (Full-HD) (1920×1080p, 60 fps)
- 2-dimensional (2D) and 3-dimensional (3D) graphics.

TDA3x is an ADAS application device based on enhanced OMAP™ architecture integrated on a 28-nm technology. TDA3x complements the TDA2x ADAS device family by using a common architecture, enabling scalability from entry to high performance for a broad range of applications. The device family is targeted at ADAS applications including Front Camera, Intelligent Rear Camera, Radar and Mirror Replacement.

2. Documentation

List of documents provided in the package

- StarterWare_Userguide.pdf
- StarterWare_DataSheet.pdf
- StarterWare_API_Reference.chm
- SBL_Userguide.pdf

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■ Installation

To install ADAS StarterWare (supports TDA1Mxx, TDA2xx, TDA2Ex and TDA3xx) on your PC, run the StarterWare installer (starterware_setupwin32_01_02_05_08.exe). The installer allows you to choose the installation directory. The ADAS StarterWare includes several sub-components and all the components will be installed in the same location (e.g., "C:/ti/ starterware_01_02_05_08").

New In this Release

- Added support for TDA2Ex platform and validated the following modules on TDA2Ex EVM:
 - Secondary Bootloader (SBL) in QSPI-1, QSPI-4, SD and NOR bootmode
 - HALs: EDMA, GPIO, GPMC, MMCSD, I2C, Mailbox, MCSPI, OCMC, QSPI, Spinlock, Timer, UART and WDTimer
 - LIBs: FAT, I2C, QSPI, NOR, VIP, DSS, VPE and PM
 - Tools: QSPI flash writer, NOR flash writer
 - Utils: UART Console
- Added support for NOR boot mode in TDA3xx SBL for 15x15 EVM.
- Added HAL driver for safety IPs: DCC, ESM and ADC.
- Validated DCAN EVM Loopback example on TDA3xx and TDA2xx EVM.
- Added and validated DCAN ECC APIs on TDA3xx EVM.
- Validated eMMC for TDA2xx platform.
- Added PMLIB APIs for CPU Idle (IPU, DSP and EVE), Set/Get Frequency APIs for CPUs (IPU, DSP & EVE for TDA2xx/TDA2Ex/TDA3xx and MPU & GPU for TDA2xx/TDA2Ex) and System Configuration APIs for TDA2xx, TDA2Ex and TDA3xx platform.
- Added examples to demonstrate the usage of PMLIB Set/Get Frequency and System Configuration APIs for TDA2x, TDA2Ex and TDA3xx platform.
- Added support for AVS on 12x12 SVB in TDA3xx SBL.
- Bug fixes
 1. OMAP500310939 Hang while doing IO recalibration in NOR bootmode
 2. OMAP500311967 [GEL] Change needed to DPLL_ABE configuration

3. OMAP500314097 [starterware] mcspi spi1tospi2 test fails for TDA3xx
4. OMAP500315251 IO Delay Programming Needs to be done based on design recommendation
5. OMAP500315892 NOR flash writer cannot access regions above 16 MB
6. OMAP500316095 [STW] Edma link PaRAM to itself resets the TCC field and will not get the interrupts
7. OMAP500316740 SDK doesn't work when built in debug mode for 02.05 release
8. OMAP500316876 ISS: DPC OnTheFly method is not getting set correctly
9. OMAP500316921 ISS: Black Line position is not set correct in H3A
10. OMAP500316970 [STW] Qspi flash mem mapped read for qspi 1 bit mode not working
11. OMAP500317797 PMHAL CM API does not enable/disable the optional clocks for modules correctly
12. OMAP500317968 [DCAN DAL] While running Dcan evm loopback example, Dcan RX fails to update message lost info
13. OMAP500318326 IO Recalibration Sequence is not as per the latest recommendation in NOR Boot mode
14. OMAP500318327 REFCLK PERIOD used while doing IO Delay Recalibration is wrong
15. OMAP500318547 [DSS] CSC bit not cleared in pipeline config if in and out formats are same
16. OMAP500318704 Vayu ES1.0 SBL should not support CORE AVS
17. OMAP500319281 QSPI Speed Incorrect for ES1.0 SBL

■ Upgrade and Compatibility Information

Below are the interface changes in starterware:

- Previously soc_defines.h was included in various header files which is removed now and added in c files where it is required. User needs to include this in their application C files.
- Modified below structures in dcan.h
 - Added new field msgLostFlag in structure dcanMsgParams_t.
 - Added new field fifoEOBFlag in structure dcanMsgObjCfgParams_t.
 - Removed the field fifoEOBFlag in structure dcanMsgParams_t.
- Added parameter 'chId' to function prototype VpsCore_ProcessIsr in vpslib/common/vpscore.h: *typedef Int32 (*VpsCore_ProcessIsr)(VpsCore_Handle handle) --> typedef Int32 (*VpsCore_ProcessIsr)(VpsCore_Handle handle, UInt32 chId)*. This was added to support muxed mode VIP capture. Existing applications can pass '0' for backward compatibility.

▪ Supported/ Validated Examples

StarterWare examples are supported for multiples cores and multiple platforms. In case of A8 core on TI814x multiple tool chains are supported. The following legend is applicable to a particular core on a particular platform and for a particular tool chain (Only in case of A8 and TI814x):

- Yes – Example is supported and tested successfully for this release
- NA – Example is not supported on the core for the particular platform
- NT – Example is supported but not tested for this release
- No – Example is supported but fails for this release

Example	Folder	TI814X			
		A8 CGT	A8 GCC	M3	C674x
ddr_test_app	examples\ddr_stress_test	Yes	Yes	NA	NA
edma_test_app	examples\edma_test	Yes	Yes	Yes	Yes
i2c_driver_led_blink_app	examples\i2c\i2c_driver_led	Yes	Yes	Yes	NA
i2c_eeprom_app	examples\i2c\i2c_eeprom_app	Yes	Yes	NA	NA
mailbox_app	examples\mailbox	Yes	Yes	Yes	NA
mcaspTransmit_app	examples\mcasp\mcasp_transmit	Yes	Yes	Yes	NA
mcspi_app	examples\mcspi	Yes	Yes	Yes	NA
mcspiMaster_app	examples\mcspiMasterSlave\master	NT	NT	NT	NA
mcspiSlave_app	examples\mcspiMasterSlave\slave	NT	NT	NT	NA
mmu_tlb_twl_app	examples\mmu\tlb_twl	NA	NA	NA	Yes
nor_edma_read	examples\nor\nor_edma_read	Yes	Yes	NA	NA
sensor_config_app	examples\ov10630_sensor	Yes	Yes	Yes	NA
timer_app	examples\timer	Yes	Yes	Yes	Yes
vipCapt	examples\vipCapt	NA	NA	Yes	NA

Example	Folder	TDA2XX		
		A15	M4	C66x
DssApp	examples\DssApp	NA	Yes	NA
boot_app	examples\boot	Yes	NA	NA
dcan_app_evm_loopback	examples\dcan\dcanEvmLoopback	Yes	Yes	NA
dcan_app_loopback	examples\dcan\dcanLoopback	Yes	Yes	NA
ddr_test_app	examples\ddr_stress_test	Yes	NA	NA
edid_programmer	examples\i2c_diag_test\edid_programmer	Yes	NA	NA
edma_test_app	examples\edma_test	Yes	Yes	NA
eeprom_app	examples\i2c_diag_test\eeprom_i2c	Yes	NA	NA
gpio_exp_app	examples\i2c_diag_test\i2c_gpio_expander	Yes	NA	NA
gpio_input_interrupt_app	examples\gpio\gpio_input_interrupt	Yes	NA	NA
gpio_output_app	examples\gpio\gpio_output	Yes	NA	NA
i2c_driver_led_blink_app	examples\i2c\i2c_driver_led	Yes	NA	NA
i2c_eeprom_app	examples\i2c\i2c_eeprom_app	Yes	NA	NA
i2c_test_app	examples\i2c_diag_test\i2c_all	Yes	NA	NA
mailbox_app	examples\mailbox	Yes	Yes	Yes

mcaspBurstTransmit_app	examples\mcasp\mcasp_bursttransmit	Yes	Yes	NA
mcaspTransmit_app	examples\mcasp\mcasp_transmit	Yes	Yes	NA
mcasp_sinetone_app	examples\mcasp\mcasp_sinetone	No	NA	No
mcspiMasterSlave_app	examples\mcspiMasterSlave\masterslave	NT	NT	NA
mcspiMaster_app	examples\mcspiMasterSlave\master	NT	NT	NA
mmc_raw_access	examples\mmc_raw_access	Yes	NA	NA
mmcsd_fileIO_app	examples\sd_fileIO	Yes	NA	NA
mmu_tlb_twl_app	examples\mmu\tlb_twl	NA	NA	Yes
mmu_translation_fault_handle_app	examples\mmu\translation_fault_handle	Yes	NA	Yes
nor_edma_read	examples\nor\nor_edma_read	NA	No	NA
nor_read_write	examples\nor\nor_read_write	Yes	NA	NA
ocmc_app	examples\ocmc\ocmc_basic	No	No	NA
pcie_app_ep_write_loopback	examples\pcie\write_loopback\ep	NT	NA	NA
pcie_app_rc_write_loopback	examples\pcie\write_loopback\rc	NT	NA	NA
pm_clkrate_test_app	examples\pm\clkrate_manager	Yes	Yes	NA
pm_cpuidle_test_app	examples\pm\cpuidle	Yes	Yes	Yes
pm_junctiontemp_test_app	examples\pm\junction_temp_sensor	Yes	NA	NA
pm_systemconfig_test_app	examples\pm\systemconfig	Yes	Yes	NA
pmic_app	examples\i2c_diag_test\pmic_i2c	Yes	NA	NA
qspi_test_app	examples\qspi_test	Yes	Yes	NA
sensor_config_app	examples\ov10630_sensor	Yes	NA	NA
spinlock_test	examples\spinlock_test	Yes	Yes	Yes
temp_sensor_app	examples\i2c_diag_test\i2c_temp_sensor	Yes	NA	NA
timer_app	examples\timer	Yes	Yes	Yes
uart1_test_app	examples\uart\uart1	Yes	NA	NA
uart3_test_app	examples\uart\uart3	Yes	NA	NA
uart_edma_test	examples\uart\uart_edma	Yes	Yes	NA
uart_intr_test	examples\uart\uart_intr	NA	Yes	NA
uart_test	examples\uart\uart_test	Yes	NA	NA
videoLoopback	examples\videoLoopback	NA	Yes	NA
vipCapt	examples\vipCapt	NA	Yes	NA
wdtimer_app	examples\wdtimer	Yes	NA	NA

Example	Folder	TDA2EX		
		A15	M4	C66x
DssApp	examples\DssApp	NA	Yes	NA
ddr_test_app	examples\ddr_stress_test	Yes	NA	NA
edid_programmer	examples\i2c_diag_test\edid_programmer	Yes	NA	NA
edma_test_app	examples\edma_test	Yes	Yes	NA
eeeprom_app	examples\i2c_diag_test\eeeprom_i2c	Yes	NA	NA
gpio_output_app	examples\gpio\gpio_output	Yes	NA	NA
i2c_driver_led_blink_app	examples\i2c\i2c_driver_led	Yes	NA	NA
i2c_eeeprom_app	examples\i2c\i2c_eeeprom_app	Yes	NA	NA
mailbox_app	examples\mailbox	Yes	Yes	Yes

mcspiMasterSlave_app	examples\mcspiMasterSlave\masterslave	Yes	Yes	NA
mmcsd_fileIO_app	examples\sd_fileIO	Yes	NA	NA
nor_read_write	examples\nor\nor_read_write	Yes	NA	NA
ocmc_app	examples\ocmc\ocmc_basic	Yes	Yes	NA
pm_clkrate_test_app	examples\pm\clkrate_manager	Yes	Yes	NA
pm_cpuidle_test_app	examples\pm\cpuidle	Yes	Yes	Yes
pm_junctiontemp_test_app	examples\pm\junction_temp_sensor	Yes	NA	NA
pm_systemconfig_test_app	examples\pm\systemconfig	Yes	Yes	NA
pmic_app	examples\i2c_diag_test\pmic_i2c	Yes	NA	NA
qspi_test_app	examples\qspi_test	Yes	Yes	NA
sensor_config_app	examples\ov10630_sensor	Yes	NA	NA
spinlock_test	examples\spinlock_test	Yes	Yes	Yes
temp_sensor_app	examples\i2c_diag_test\i2c_temp_sensor	Yes	NA	NA
timer_app	examples\timer	Yes	Yes	Yes
uart1_test_app	examples\uart\uart1	Yes	NA	NA
uart_edma_test	examples\uart\uart_edma	Yes	Yes	NA
uart_intr_test	examples\uart\uart_intr	NA	Yes	NA
uart_test	examples\uart\uart_test	Yes	NA	NA
videoLoopback	examples\videoLoopback	NA	Yes	NA
vipCapt	examples\vipCapt	NA	Yes	NA
wdtimer_app	examples\wdtimer	Yes	NA	NA

Example	Folder	TDA3XX	
		M4	C66x
DssApp	examples\DssApp	Yes	NA
adc_app	examples\adc_app	Yes	NA
boot_app	examples\boot	Yes	NA
crc_app	examples\crc	Yes	Yes
dcan_app_evm_loopback	examples\dcan\dcanEvmLoopback	Yes	NA
dcan_app_loopback	examples\dcan\dcanLoopback	Yes	NA
dcc_app	examples\dcc_app	Yes	NA
ddr_test_app	examples\ddr_stress_test	Yes	NA
edid_programmer	examples\i2c_diag_test\edid_programmer	Yes	NA
edma_test_app	examples\edma_test	Yes	NA
eeeprom_app	examples\i2c_diag_test\eeeprom_i2c	Yes	NA
esm_app	examples\esm_app	Yes	NA
gpio_input_interrupt_app	examples\gpio\gpio_input_interrupt	NT	NA
gpio_output_app	examples\gpio\gpio_output	Yes	NA
i2c_eeeprom_app	examples\i2c\i2c_eeeprom_app	Yes	NA
i2c_driver_led_blink_app	examples\i2c\i2c_driver_led	Yes	NA
mailbox_app	examples\mailbox	Yes	Yes
mcaspTransmit_app	examples\mcasp\mcasp_transmit	Yes	NA
mcspiMasterSlave_app	examples\mcspiMasterSlave\masterslave	NT	NA
mmcsd_fileIO_app	examples\sd_fileIO	Yes	NA
mmu_tlb_twl_app	examples\mmu\tlb_twl	NA	Yes

mmu_translation_fault_handle_app	examples\mmu\translation_fault_handle	Yes	Yes
nor_edma_read	examples\nor\nor_edma_read	Yes	NA
nor_read_write	examples\nor\nor_read_write	Yes	NA
ocmc_app	examples\ocmc\ocmc_basic	No	No
pm_clkrate_test_app	examples\pm\clkrate_manager	Yes	NA
pm_cpuidle_test_app	examples\pm\cpuidle	Yes	Yes
pm_junctiontemp_test_app	examples\pm\junction_temp_sensor	Yes	NA
pm_systemconfig_test_app	examples\pm\systemconfig	Yes	NA
pmic_app	examples\i2c_diag_test\pmic_i2c	Yes	NA
qspi_test_app	examples\qspi_test	Yes	NA
rti_app	examples\rti	Yes	NA
sensor_config_app	examples\ov10630_sensor	Yes	NA
spinlock_test	examples\spinlock_test	Yes	Yes
temp_sensor_app	examples\i2c_diag_test\i2c_temp_sensor	Yes	NA
timer_app	examples\timer	Yes	Yes
uart1_test_app	examples\uart\uart1	Yes	NA
uart2_test_app	examples\uart\uart2	Yes	NA
uart3_test_app	examples\uart\uart3	Yes	NA
uart_edma_test	examples\uart\uart_edma	Yes	NA
uart_intr_test	examples\uart\uart_intr	Yes	NA
uart_test	examples\uart\uart_test	Yes	NA
videoLoopback	examples\videoLoopback	Yes	NA
vipCapt	examples\vipCapt	Yes	NA

▪ Release Content

Category	Peripherals
HAL	UART, I2C, GPIO, Mailbox, Spinlock, EDMA, GPMC, McASP, McSPI, OCMC, QSPI, MMU, Timer, MMCSD, PCIe, DCAN, RTI, CRC, ESM, ADC, DCC and WDTimer
Libs	I2C, QSPI, FAT, NOR, VIP, DSS, VPE, ISS and PM
Utils	Uart console
Examples	Examples for the supported hal peripheral drivers.
Bootloader	SBL bootloader for TDA2xx, TDA2Ex and TDA3xx platform.

▪ Known Issues

CQ Id	Headline	Release Version
OMAPS00297890	McSPI master slave sample app not validated on ti814x	StarterWare_00_02_01_11
OMAPS00298489	[STW] Enable Semi-hosting in Cortex-A15 build system	StarterWare_00_02_02_12

OMAPS00298854	[SBL] - Bring MPU_CPU1 core out of reset	StarterWare_01_00_00_14
OMAPS00307878	[I2C] "1.5 System I2C hang due to miss of Bus Clear support" Errata workaround needs to be implemented	Starterware_01_01_01_18
OMAPS00307879	[GP Timer] "1.8 Delay needed to read some GP timer registers after wakeup" Errata workaround needs to be implemented	Starterware_01_01_01_18
OMAPS00307880	[DSS] "1.10 LCDENABLE Not Functional" Errata workaround needs to be implemented	Starterware_01_01_01_18
OMAPS00308667	ABB is not tested by verifying the bias voltage at the bias capacitor	StarterWare_01_01_02_19
OMAPS00312717	Random display controller failure observed on some TDA2x EVMS	StarterWare_01_01_03_20
OMAPS00312927	Temp sensor APP fails when we run the starterware tests back to back	StarterWare_01_02_01_02
OMAPS00312928	videoLoopback App : FPS is observed as 58 instead of 60	StarterWare_01_02_01_02
OMAPS00313546	MMCSd file IO app returns file create error on second run for TDA3xx	StarterWare_01_02_01_02
OMAPS00314648	Sometimes ApplImage isn't booting with SBL on TDA3xx	StarterWare_01_02_02_03
OMAPS00314660	[DSS]- Frame height should be used for Interlaced display	StarterWare_01_02_02_03
OMAPS00316393	Need to implement Manual Mode and Virtual Mode delay sequence while doing pin mux	StarterWare_01_02_04_05
OMAPS00319282	App fails for NON_ECC_CODE_ACCESS mode for OCMC Basic test in OCMC application for TDA2xx and TDA3xx platform.	StarterWare_01_02_05_08

- **Known Limitations**

1. Junk characters are observed in the UART terminal whenever we do reset on the board because of EVM issue. This is observed on TDA3xx-EVM and TDA2Ex-EVM.

- **Build Dependencies**

Tool chain	Version	Description
TMS470 CG	5.1.5	Compiler for Cortex A8
TMS470 CG	5.1.5	Compiler for Cortex M3 and Cortex M4
C6000 CG Tool	7.4.2	Compiler for C674x and C66x
CCS	5.5.0.00077	Code composer studio to load and run the application. Build system on windows uses tools from Cygwin like gmake, rm, mkdir etc.
TI Emulator Package	5.1.600.0	This is the version of emulator package that should be used in CCS
Linaro bare-metal GCC	Linaro GCC 4.7.2013q3	Compiler for Cortex A8 GCC
Linaro bare-metal GCC	Linaro GCC 4.7.2013q3	Compiler for Cortex A15