**StarterWare 01.02.05.08**

**Release Notes**

Applies to Product Release: 01.02.05.08

Publication Date: 26 February, 2015

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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.

1. **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. OMAPS00310939 Hang while doing IO recalibration in NOR bootmode
2. OMAPS00311967 [GEL] Change needed to DPLL\_ABE configuration
3. OMAPS00314097 [starterware] mcspi spi1tospi2 test fails for TDA3xx
4. OMAPS00315251 IO Delay Programming Needs to be done based on design recommendation
5. OMAPS00315892 NOR flash writer cannot access regions above 16 MB
6. OMAPS00316095 [STW] Edma link PaRAM to itself resets the TCC field and will not get the interrupts
7. OMAPS00316740 SDK doesn't work when built in debug mode for 02.05 release
8. OMAPS00316876 ISS: DPC OnTheFly method is not getting set correctly
9. OMAPS00316921 ISS: Black Line position is not set correct in H3A
10. OMAPS00316970 [STW] Qspi flash mem mapped read for qspi 1 bit mode not working
11. OMAPS00317797 PMHAL CM API does not enable/disable the optional clocks for modules correctly
12. OMAPS00317968 [DCAN DAL] While running Dcan evm loopback example, Dcan RX fails to update message lost info
13. OMAPS00318326 IO Recalibration Sequence is not as per the latest recommendation in NOR Boot mode
14. OMAPS00318327 REFCLK PERIOD used while doing IO Delay Recalibration is wrong
15. OMAPS00318547 [DSS] CSC bit not cleared in pipeline config if in and out formats are same
16. OMAPS00318704 Vayu ES1.0 SBL should not support CORE AVS
17. OMAPS00319281 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 |

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| --- | --- | --- | --- | --- |
| **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 |
| eeprom\_app | examples\i2c\_diag\_test\eeprom\_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\_eeprom\_app | examples\i2c\i2c\_eeprom\_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 |
| eeprom\_app | examples\i2c\_diag\_test\eeprom\_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\_eeprom\_app | examples\i2c\i2c\_eeprom\_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 AppImage 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 |