

DM816x EZSDK 5.05 Release Notes

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Easy Software Development Kit (EZSDK) 5_05_01_04 for the DM816x

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This is an Alpha release of the Easy Software Development Kit (EZSDK) 5.05 for the DM816x platform. This EZ SDK Software release gives developers the ability to evaluate the hardware and software capabilities of the DM816x platform. Developers will be able to evaluate the ARM Linux programming environment and easily utilize the hardware support for powerful DSP algorithms and multimedia acceleration.

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Documentation

- Latest up to the minute information and updates may be found on the [Texas Instruments Embedded Processors Wiki](#).
- The *Quick Start Guide* contains information on how to set up your EVM for an out of box demo showcase as well as for software development. It is located in the *docs/* folder in the EZ SDK along with other documentation.
- The *Software Developer's Guide* contains information on how to start developing software on the DM816x EVM and is located in the *docs/* folder in the EZSDK along with other documentation.

Components

The Linux EZSDK for DaVinci DM816x is a single package that includes the following components:

- Platform Support Package
 - ◆ Linux kernel 2.6.37
 - ◆ Boot loaders (u-boot)
- DSP Package
 - ◆ Codec Engine Framework
 - ◆ C6000 code generation tool chain
 - ◆ SYS/BIOS Real Time Operating System
 - ◇ Remote Processor Execute
 - ◆ SYS/Link Inter Processor Communication
- Graphics Package
 - ◆ Neon accelerated Qt application framework
 - ◇ Support for SGX Acceleration in QT (Engineering Release)
 - ◆ 3D Graphics Support
- Multimedia Package
 - ◆ OpenMAX IL libraries
 - ◇ H.264 Encode and Decode
 - ◇ MPEG4 Encode and Decode
 - ◇ VC-1 Decode
 - ◇ AAC-LC Decode
 - ◇ AAC-LC Encode (Requires separate codec download)
 - ◇ MP3 Decode (Requires separate codec download)
 - ◆ GStreamer libraries and plugins
 - ◇ GST-OpenMax
- Demos
 - ◆ OMTB - tool to easily create different OpenMAX IL component chains
 - ◆ Matrix GUI Launcher
 - ◆ Benchmarking applications

The Software Build of Materials can be found at
http://processors.wiki.ti.com/index.php/Category:EZSDK_Software_BOM.

What's New

The following high-level features are new from EZSDK 5.04 product release:

- Bug Fixes

Details on previous releases and the features as they were introduced can be found at
http://processors.wiki.ti.com/index.php/EZSDK_Roadmap

- This release is intended to fix the defects raised in system testing. Following IRs are addressed in this release.

SDOCM00077197	Bootargs (Linux Memory Requirement) required by VS and VC all core demo is not mentioned anywhere
SDOCM00078722	SDK 5009: Memory Map change requires header file editing
SDOCM00079655	Documentation: Release notes and User Guide issues
SDOCM00079845	SD and MMC card not working properly with the uImage and file system provided with the release
SDOCM00080160	lsmod is showing TI81xx_hdmi instead of module name (TI81xx_HDMI.ko). Not able to remove the module with rmmod TI81xx_HDMI
SDOCM00080767	3D Graphics demo: Chameleon, Coverflow and Shader has artifacts.
SDOCM00083196	Firmware unloading and loading for hdvpss is not working
SDOCM00086709	Step missing to add edma3l1d build in EZSDK overlay installer build instructions doc - results in build failure in omx
SDOCM00089069	Thin line is coming left side while booting under u-boot logo.
SDOCM00091024	Build Record for 5.04.00.07
SDOCM00091643	While booting error messages are coming for v4L2 after change the firmware from OMX.
SDOCM00093719	matrix GUI is not comingup and giving fatal error for VPSS drivers for SD card and NFS boot
SDOCM00093811	Running Gstreamer, creating OMX IL app, Codec Engine Example, display logo at boot sections are missing from SDG
SDOCM00093812	Graphics Sdk examples are not executing.
SDOCM00093813	RPE examples are not executing as per the RPE user guide
SDOCM00095475	Default Memory map needs to be modified for providing more heap to video M3. (3 1080p, or 4 720p decode apps)
SDOCM00096233	make of linux-devkit and dsp-devkit are failing
SDOCM00096229	Software Development Guide(SDG) update is pending
SDOCM00096314	Overlay.Makefile all is failing from top level overlay make of EZSDK

Installation and Usage

The *Software Developer's Guide* contains information on how to start developing software on the DM816x EVM and is located in the *docs/* folder in the EZSDK along with other documentation.

Host Support

This release supports Ubuntu 10.04 LTS 32-bit and Ubuntu 11.10 32 bit as your development host.

Dependencies

The EZSDK requires the CodeSourcery toolchain, a link is provided on the EZSDK 5.05 Release Page or provided with a CD in your EVM kit.

Device Support

This EZSDK supports the DM816x EVM.

Validation Information

This release has been tested with EVM Base board Revision-C and Expansion IO Card. This Release has been verified on both ES1.1 and ES2.0 versions of the DM816x Silicon.

Upgrade and Compatibility Information

Changes to Uboot

Uboot needs to be updated from the previous release as this SDK brings in new versions of the PSP U-Boot.

Filesystem Upgrade

It is recommended that the filesystem from this SDK release is used as it brings in the newer linux libraries, new kernel objects and updated demo applications.

DDR2 EVMs Compatibility

This release supports for EVMs with DDR3 memory by default. If you have a DDR2 EVM, then this release will not work out of the box.

Special instructions for DDR2 EVMs

1. The U-Boot needs to be rebuild for DDR2 EVMs. Please refer the *Software Developers Guide* for instructions on how to update U-Boot and rebuild it.
2. In the target filesystem move `/etc/rc5.d/S10load-hdvp2-firmware.sh` to `/etc/rc5.d/K10load-hdvp2-firmware.sh`. This ensures that HDVICP2 Hardware is not loaded.

Expansion IO Card Requirement

Multimedia applications will not run if you have an older DDR2 EVM or a DDR3 EVM without a Expansion IO (EIO) Card. To run the Multimedia demos on the DDR3 EVM you will need the EIO Card affixed to the lower part of the Base EVM.

NAND Flash Changes

1. The default ECC scheme used across Uboot, Kernel and File System is changed to 8-bit BCH ECC.
2. The release supports both 8 and 16 bit NAND flash. To use 8-bit NAND, set the CS0BW (buswidth) switch on the EVM to OFF state. To use 16-bit NAND, set the CS0BW (buswidth) switch on the EVM to ON state.

Please read the PSP Release notes for details on the NAND Flash changes. Note that you must to change CS0BW switch to ON state in order to access the NAND on the EVM.

Note: CS0BW switch is the 8th Pin on the EVM Boot Mode Switch.

Known Issues and Limitations

Known Issues

1. SDOCM00073168 - SDK installer deletes the entire contents of the install folder when installation is cancelled (Cloned from DVSDK 4.0).
2. SDOCM00078655 - **USB mouse devices are not always recognized on bootup on DDR3 EVM. Workaround - The board needs to be power cycled by holding down the reset button for a five seconds.**
3. SDOCM00086122 - QT Multi: Driver does not repaint all regions. As a result when using multiple graphics planes, only one will be refreshed. No Workaround exists.
4. SDOCM00087104 - Streams with non-standard height cannot be displayed without scaling. Workaround - Decoded video must be scaled to a standard height and then displayed.
5. SDOCM00087096 - Unable to display on some TVs at 1080i. No Workaround exists.
6. SDOCM00091274 - Build is failed for components_linux and components_dsp after moving the devkits.
7. SDOCM00096411 - md5sum not matching for dsp devkit component - integrity check failed for EZSDK installation.
8. SDOCM00077294 - [VC Demo] System hangs if SATA is unplugged and plugged back while VC all core demo is executing
9. SDOCM00078374 - Ext3 filesystem is slow in performance
10. SDOCM00079405 - system hang while running the 3D demo OGLESFilmTV
11. SDOCM00079603 - DEI component port enable/disable not supported
12. SDOCM00081092 - OMX component does not throw error if set the chroma format to 420SP for VFDC input and Scaler output.
13. SDOCM00081273 - Error is coming while execution , if component moved from loaded to idle state with port disabled.
14. SDOCM00081275 - IncorrectStateTransition is coming after idle->idle->loaded state transition when ports are disabled.
15. SDOCM00081278 - Target hangs if port enables and disable multiple times in idle and exec state.
16. SDOCM00081654 - Simultaneously running multiple applications having its own Shared region usecase is always crashing

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17. SDOCM00082394 - VENC OMX component crashes when src FQ is connected to a COMP with a larger nBufferCountActual than default for VENC
18. SDOCM00083407 - Quality of encoded stream is not good (blocky) using Capture encode IL Client
19. SDOCM00083421 - Teardown: Target hangs if component disabled port is enable in idle and exec state.
20. SDOCM00083422 - Teardown: EVM hangs if Port enabled in Idle and Exec state for scalar component
21. SDOCM00083496 - Target hangs after 502 iteration (8 hours) for (dual display encode decode) oms script.
22. SDOCM00083510 - 3D demos throws the message "SGX Hardware Recovery triggered" and quality is not good(inconsistant)
23. SDOCM00083928 - [GST_REL_01_00_00] stream having only I-frame is not played and system hangs
24. SDOCM00084166 - STRESS:Jerkiness observed for dual display scenario after 12 hours.
25. SDOCM00084264 - OMX State Transitions: re-transition to 'exec' state hangs for loaded=>idle=>exec=>idle=>exec=>idle=>loaded' transit
26. SDOCM00084270 - OMX_ErrorBadParameter is coming if set the OMX_IndexParamVideoAvc index values.
27. SDOCM00084748 - Build errors after moving the devkits
28. SDOCM00085349 - [DEV_GST_00_02_00 Beta] [MP4+H264+AACLCL] overnight loop playback make system hang
29. SDOCM00086208 - Audio encode IL client for capture scenerio will not exit and also the captured volume is very very low
30. SDOCM00087060 - Mpeg2 Decode -> SC->Display, display is jerky (quality degradation).
31. SDOCM00087126 - Stress test case: Audio decode dump will hang after ~15min while running 3D demo parallely
32. SDOCM00091274 - Build is failed for components_linux and components_dsp after moving the devkits.
33. SDOCM00091307 - STRESS:Jerkiness observed for H264 stream after 13 hours
34. SDOCM00091338 - Decode display IL client Crash while executing multiple times from SATA Hard disk.
35. SDOCM00091722 - Stability issue,If i/p capture cable is unplug and plug-in multiple time, Assertion is coming for next demo on DM8168 PG 1.1.
36. SDOCM00091883 - Thin Client HP - SIGSEGV Error on repeated GST-OMX pipeline startup/shutdown
37. SDOCM00092005 - Customer Issue - RGB24 Capture using V4L2 results in an overflow
38. SDOCM00092104 - [GStreamer+MPEG2] Specific stream content does not play back to back (random hangs observed)
39. SDOCM00092115 - [GStreamer+MPEG2+AC3] Some streams does not play till end of stream(exits after 1 or 2 frames)
40. SDOCM00092200 - Gstreamer quality issue for a specific stream
41. SDOCM00092411 - [GStreamer+MPEG2+MP3] For specific customer stream system hangs if played with audio pipeline
42. SDOCM00092520 - Gstreamer playbin: JPEG video streams issues
43. SDOCM00092574 - [AVI+H264+MP3] Not able to play some .avi files using playbin
44. SDOCM00092703 - Gstreamer: H264 elementary streams are decoded and displayed at faster rate.
45. SDOCM00092714 - Gstreamer: MP4 streams with resolution 2048x872 did not play
46. SDOCM00093394 - Audio Decode IL client(MP3) not able to decode Mpeg1 layer1,2,3 files
47. SDOCM00093790 - OMX application can not be debugged with gdb
48. SDOCM00094084 - Cache enable on A8 on EZSDK (FQ)

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- 49. SDOCM00094353 - diofq_framedq_create() enters infinite loop if memory not available rather than returning error
- 50. SDOCM00095156 - VFPC-TXSC does not handle buffer passing correctly if input and output are same size
- 51. SDOCM00095335 - Memory leak of 128 bytes in configureUIALoggerClient
- 52. SDOCM00095949 - MJPEG Parser is not available in SDK package, so MJPEG decode example does not decode mjpeg stream.
- 53. SDOCM00096009 - DM8148 : Jerky video output with GStreamer and DEI for an interlaced stream
- 54. SDOCM00096174 - snd_pcm_avail() returns a negative number of available words due to non-sequential value read by edma_get_position()
- 55. SDOCM00096317 - Component state transition fails when moved from idle to idle, execute to loaded and execute to execute with port enabled
- 56. SDOCM00096318 - v4l2 capture example saLoopBack is failing
- 57. SDOCM00096344 - Concurrency Execution between V4L2 example saMmapDisplay + video omx IL client application + audio omx IL client fails
- 58. SDOCM00096373 - Over night Loading and unloading the modules (/etc/init.d/load-hd-firmware.sh stop/start) fails.
- 59. SDOCM00096459 - syslink messageq examples fails after running in loop for 1 hour

Limitations

1. **External video capture is only supported through the TVP7002 video decoder via I2C1. Customers are required to maintain the same configuration on their boards. The EZSDK will support additional capture devices in future releases. Customers will also be able to add capture devices of their choice in future releases.**
2. **The Media Controller HDVICP2 firmware initializes and configures the EIO (Expansion IO) card. Existing Integra/Sitara customers with DDR2 or DDR3 boards and who do not have the EIO card need to manually remove the initialization for HDVICP2 from linux initscripts.**
3. The EZSDK does not ship with a full Graphics SDK installation but only contains the Kernel sources, OpenGL libraries and header files. As a result it is no longer possible to build the OpenGL Demos from within the EZSDK. To get the full Graphics SDK which includes demos, you can download the latest version from http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/gfxsdk/latest/index_FDS.html
4. This release has a degradation in the overall out of the box boot time of the EZSDK. Please see the Wiki topics on Fast Boot and Fast Boot Streaming on TI's Processor's wiki on more information on how to improve the boot time.

Errata

Additional Errata information is maintained on TI's Processor Wiki at http://processors.wiki.ti.com/index.php/Category:EZSDK_Errata.

Versioning

This is an Alpha release (EZSDK 5_05_01_04) for DM816x/C6A816x/AM389x.

Technical Support and Product Updates

Latest up to the minute information and updates may be found on the [Texas Instruments Embedded Processors Wiki](#).

The [Embedded Software Linux forum](#) is a forum for discussing the Linux EZSDK development. New versions of the EZSDK are also announced here.

The [EZSDK download page](#) is a top level page for finding the latest EZSDK releases for all TI platforms.

Additional Information

1. EZ SDK FAQ is available and will contain updated information on questions - http://processors.wiki.ti.com/index.php/EZ_SDK_FAQ
2. Embedded Processor Wiki - http://processors.wiki.ti.com/index.php/Main_Page

E2E Forum Support

1. E2E Linux Forum - <http://e2e.ti.com/support/embedded/f/354.aspx>
2. E2E DaVinci Processor Forum - http://e2e.ti.com/support/dsp/davinci_digital_media_processors/default.aspx