DM816x C6A816x AM389x EZSDK 5.01.01 Release Notes

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Easy Software Development Kit (EZSDK) 5_01_01_80 for the DM816x/C6A816x/AM389x

Jun IST

This is an Early Adopter release of the Easy Software Development Kit (EZSDK) 5.01 for the DM816x/C6A816x/AM389x platform. This EZ SDK Software release gives developers the ability to evaluate the hardware and software capabilities of the DM816x/C6A816x/AM389x platform. Developers will be able to evaluate the ARM Linux programming environment and easily utilize the hardware support for powerful DSP algorithms and multimedia accleration.

This document is divided into the following sections:

Contents

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/C6A816x/AM389x EVM and is located in the *docs/* folder in the EZSDK along with other documentation.

Components

The Linux EZSDK for DaVinci DM816x, Integra C6A816x and Sitara AM389x 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
    ♦ SYS/Link Inter Processor Communication
    ♦ C6Accel - easy access to DSP accelerated function libraries
    ♦ C6Run - tool to easily run C code on the DSP
- Graphics Package
    ♦ Neon accelerated Qt/Webkit application framework
    ♦ 3D Graphics Support
- Multimedia Package
    ♦ OpenMAX IL libraries
- Demos
    ♦ OMTB - tool to easily create different OpenMAX IL component chains
    ♦ Signal Analyzer Demo that showcases DSP Acceleration with QT 2D Graphics
    ♦ Matrix GUI Launcher
    ♦ Benchmarking applications

What's New

The following high-level features are new from the previous SDKs:

- This release is a patch release on top of 5.01.00.77.
- This release adds support for DM816x.
- This release supports DM816x/C6A816x/AM389x EVMs that use DDR3 Memory.
- This release integrates Multimedia components such as OpenMAX IL Libraries.
- This release integrates new versions of underlying components such DSP Packages, Linux Kernel etc.
- This release support multi display graphics on HDMI and Component output.
- This release adds the DSP Benchmarks Demo

This release fixes the following issues.

1. SDOCM00080962 Codec engines examples run failed
2. SDOCM00081239 EZSDK - Relnotes does not contain sufficient information on how to install for DDR2 EVMs
3. SDOCM00080873 Video decode examples not present in the release.
4. SDOCM00080917 Information in SDG is not adequate enough to run the syslink examples
5. SDOCM00081551 Enhance the decode example to include more descriptive code comments

Installation and Usage

The *Software Developer's Guide* contains information on how to start developing software on the DM816x/C6A816x/AM389x EVM and is located in the *docs/* folder in the EZSDK along with other documentation.

Host Support

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

Dependencies

The EZSDK requires the CodeSourcery toolchain, a link is provided on the EZSDK 5.01 Release Page or provided with a CD in your EVM kit.

Device Support

This EZSDK supports the DM816x/C6A816x/AM389x EVM.

Validation Information

This release has been tested with EVM Base board Revision-C and Expansion IO Card. This release has been sanity checked with DDR2 boards.

Upgrade and Compatibility Information

DDR2 EVMs Compatibility

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

Installation instructions for DDR2 EVMs

1. Run the installer in the GUI mode
2. Uncheck the option for Multimedia components. This will ensure that TI OpenMAX and OMTB software is not installed.
3. Continue and complete the installation.

Uboot rebuild for DDR2 EVMs

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.

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.
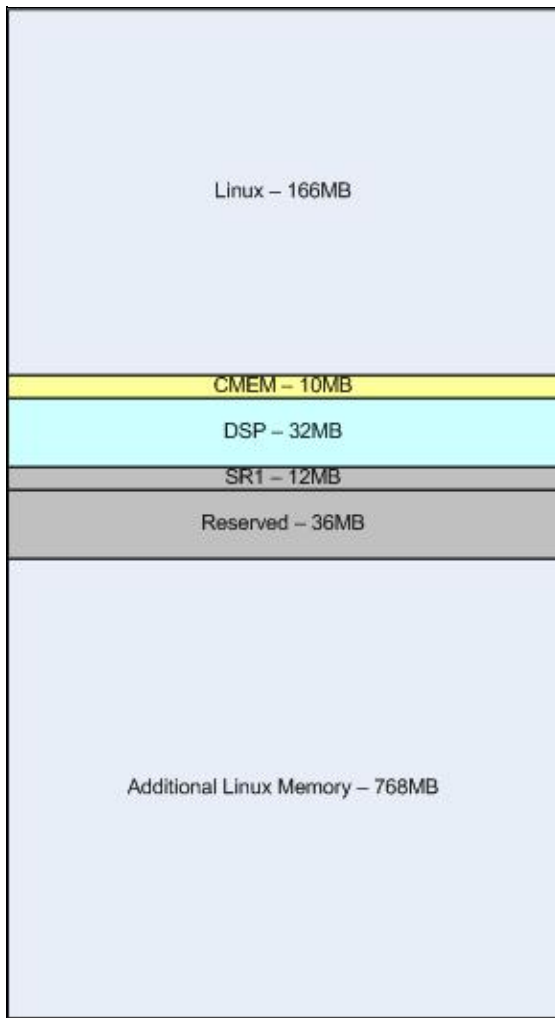
Memory Map Changes

This release changes the memory map in order to support the DM816x device. The memory map for EZSDK 5.0 has been changed.

EZSDK 5.01 Memory Map

Linux – 256MB

Reserved – 64MB

CMEM – 10MB

DSP – 32MB

SR1 – 12MB

Reserved – 650MB
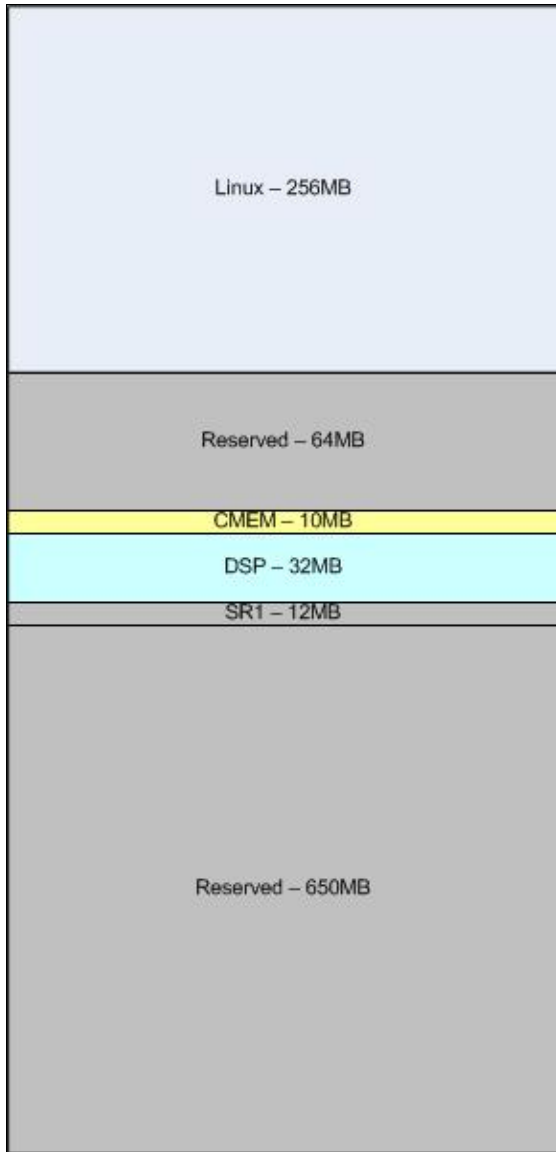
EZSDK 5.00 Memory Map

EZSDK 5.01 Memory Map

Known Issues and Limitations

Known Issues

1. SDOCM00073168 - **If Installation is cancelled before completion, the SDK installer corrupts the host pc filesytem. Workaround - Allow the installer to complete and delete the installed files after completion. This will be fixed in the next release.**
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. SDOCM00081333 - On first run of the 1080p60 Encode/Decode demo, a blank screen is seen for a couple of seconds before video starts
4. SDOCM00075315 - Blitrix samples do not run as touchscreen is not yet integrated. These will be addressed in a future release.
5. SDOCM00080848 - syslink ringio sample application fails
6. SDOCM00080904 - Demo doesnâ t start from same frame when demo is restarted

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. **OMX_Deinit() and OMX_FreeHandle() of components are not supported currently. Creating an OMX chain will result in the Media Controller firmware being locked for that usecase. Please reboot the board when you wish to run a different usecase. This will be addressed in future releases.**
3. **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 should not install the multimedia components.**
4. The memory map for the firmware and DSP are fixed as described above. This limitation will be removed in future releases by supporting dynamic relocation of firmware.
5. Make all from the EZSDK toplevel Makefile will not work if the EZSDK is installed without multimedia (i.e for Integra/Sitara users). Workaround - Components and demos need to be built by running individual make targets.
6. Building the Syslink samples by running make all is disabled. Workaround - To build the Syslink samples, please follow the Syslink documentation on how to build samples explictly.

Planned Feature Enhancements

1. Support for Video Capture and Display via V4L2 APIs.
2. Support 3 Channel 1080p60 Encodes.
3. Support for additional Video Decoders (MPEG2, MPEG4, VC-1).
4. Support Audio Codecs (MP3, AAC) on DSP.
5. Integrated GStreamer support and packaging in the EZSDK.
6. Support for OpenCV APIs.

Versioning

This is an early adopter release (EZSDK 5_01_01_80) 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
3. E2E Integra Processor Forum - http://e2e.ti.com/support/dsp/integra_dsparm/default.aspx
4. E2E Sitara Processor Forum - http://e2e.ti.com/support/dsp/sitara_arm174_microprocessors/default.aspx