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An Audio Example Using Reference Frameworks on the DMA642 EVM

Video and Imaging Systems

ABSTRACT

The software implements audio examples for Reference Frameworks 3 and Reference Frameworks 5 on the DM642 EVM. These examples are direct ports of the Reference Frameworks examples for the TEB6415 in subdirectories apps/rf3/teb6415 and apps/rf5/projects/teb6415 under the Reference Frameworks installation.

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For more detailed information on the RF3 example, see *Reference Frameworks for eXpressDSP Software: RF3, A Flexible, Multi-Channel, Multi-Algorithm, Static System* (SPRA793D).

For more detailed information on the RF5 example, see *Reference Frameworks for eXpressDSP Software: RF5, An Extensive, High-Density System* (SPRA795A).

System Requirements / Configuration

Software Requirements

- Microsoft Windows NT (SP6), 2000 (SP1 and SP2), or XP

- Code Composer Studio™ Integrated Development Environment (IDE), version 2.20.18 or later

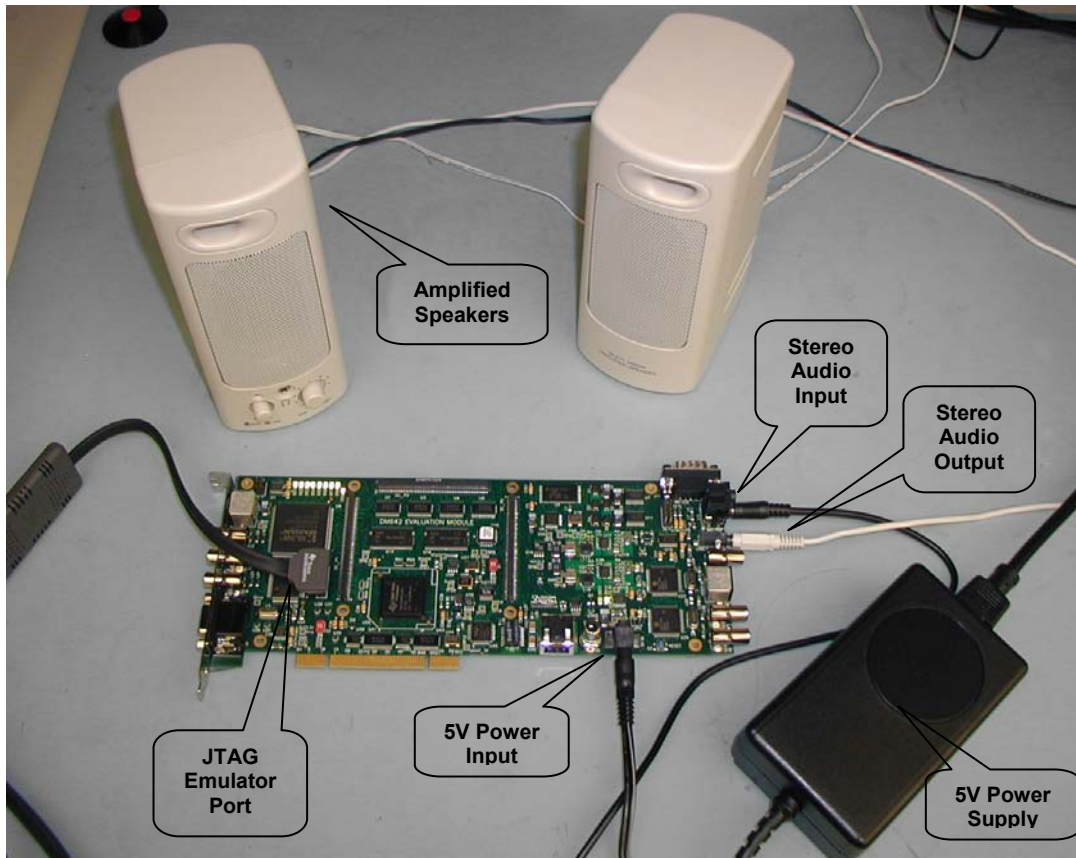- Device Driver Kit (DDK) version 1.1 or later

Hardware Requirements

- 233-MHz or higher Pentium-compatible CPU (500-MHz or higher Pentium II CPU or equivalent is recommended)

- DM642 EVM

- XDS 510 or 560 emulator

- Stereo audio source

- Stereo amplifier or amplified speakers

Hardware Setup

To run the example, the hardware needs to be set up as shown:

Figure 1.   Hardware Setup

- The DM642 EVM must be connected to its 5-V power supply.

- The 5V power supply must be connected to an appropriate power outlet.

- The XDS510 or 560 emulator must be connected to the JTAG connector to download the example code to the board and control it from Code Composer Studio™ IDE.

- The stereo audio source must be connected to the LINE IN (bottom of J13) connector.

- The speakers must be connected to the LINE OUT connector (J14).

Building and Running the RF3 Application

To build and run the RF3 application:

1. Within Code Composer Studio™ IDE, choose Project>Open and select the app.pjt project in boards\evmdm642\examples\audio\rf3\evmdm642.

2. Choose Project>Build to build the RF3 application.

3. Choose File>Load Program and load the app.out file in the Debug subfolder.

4. Start your CD player or other audio input.

5. Choose Debug>Run (or F5). You should hear the FIR filtered audio output through the speakers connected to the target board.

6. Choose File>Load GEL and select the app.gel file from the project folder (above the Debug folder). The app.gel file is a GEL script file displays some GUI controls. When you move these controls, the script writes certain values to the target memory. These values control which of the two channels is active and the volume level for each channel.

7. Choose GEL>Application Control>Set Active Channel. A slider with two positions appears. The positions select the output channel. The down position selects channel 0, which uses a low-pass filter. The up position selects channel 1. Channel 1 uses a highpass filter, which makes the music sound somewhat better.

8. Choose GEL>Application Control>Set_channel_0_gain. A slider appears with values for channel 0 volume ranging from 0 to 200. The default value is 100. Channel 0 must be the active channel for the slider to produce audible changes.

9. Similarly, to control the volume of channel 1, choose GEL>Application Control>Set_channel_1_gain, and use the slider to control channel 1 volume.

Figure 2 shows the RF3 directory structure.
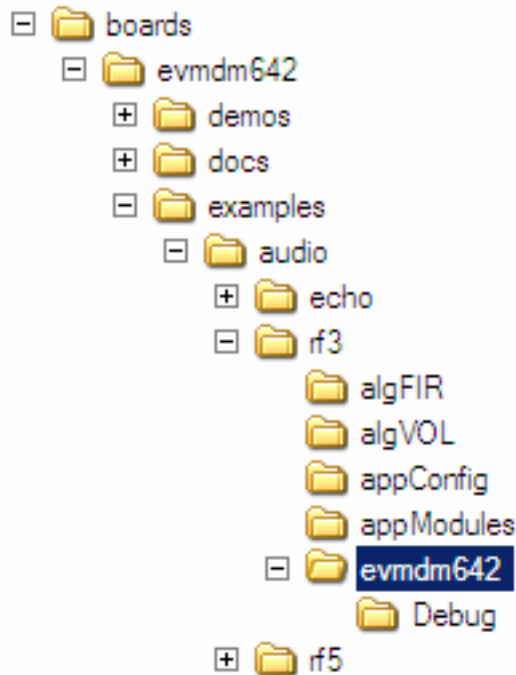
Figure 2.   RF3 Directory Structure

Building and Running the RF5 Example

To build and run the RF5 application:

1. Within Code Composer Studio™ IDE, choose Project>Open and select the app.pjt project in boards\evmdm642\examples\audio\rf5\projects\evmdm642.

2. Choose Project>Build to build the RF5 application.

3. Choose File>Load Program and load the app.out file in the Debug folder.

4. Start your CD player or other audio input.

5. Choose Debug>Run (or F5). You should hear the FIR filtered audio output through the speakers connected to the target board.

6. Choose File>Load GEL and select the appControl.gel file from the project folder (above the Debug folder).

NOTE:
The appControl.gel file is a GEL script file that displays sliders to control algorithm parameters. When you move these controls, the script writes values to program variables on the target.

7. Choose GEL>Process Control>Volume. A slider appears with values ranging from 0 to 200. The default value is 100. Sliding this controls the output volume on a stereo codec.

8. Choose GEL>Process Control→Filter1 (or Filter2). A slider appears with values ranging from 0 to 2 (default value is 1). Slide to control the FIR filter coefficients.
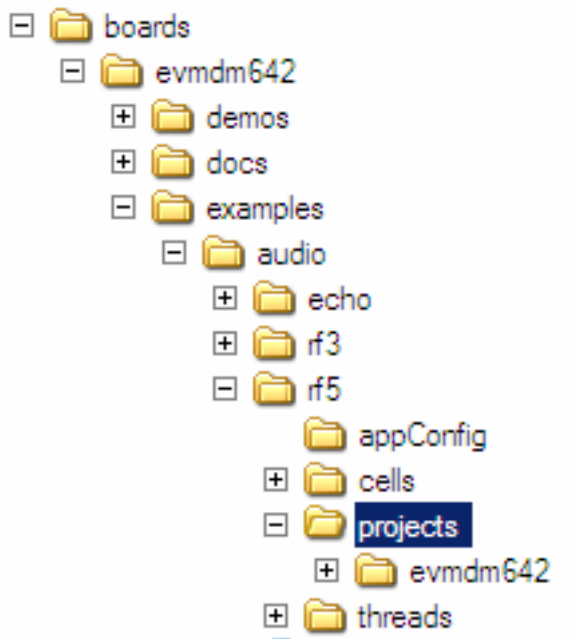
Figure 3.   RF5 Directory Structure

IMPORTANT NOTICE