

Audio Demonstration on the DM642 EVM

Video and Imaging Systems

ABSTRACT

The software demonstrates a g.729a voice codec running on the DM642 EVM. The demonstration collects stereo samples and plays back the resulting samples. The right channel samples are not modified and fed straight through. The left channel samples are fed through a g.729a encoding and decoding process and the resulting samples are played back.

The demonstration uses/features:

- Low pass filter and downsample from 48 kHz -> 8 kHz
- g.729a encoder/decoder
- Upsample from 8 kHz -> 48 kHz and low pass filter

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Software Architecture

This demonstration shows a system that performs the following functions:

- Collects stereo audio samples at 48K samples/second
- Feeds the right channel samples straight through, and performs the following functions on the left channel samples:
 - Low pass filter and downsample from 48 kHz -> 8 kHz
 - g.729a encode
 - g.729a decode
 - Upsample from 8 kHz -> 48 kHz and low pass filter

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- Plays back the new samples

Figure 1 shows a simple flow diagram of this process.

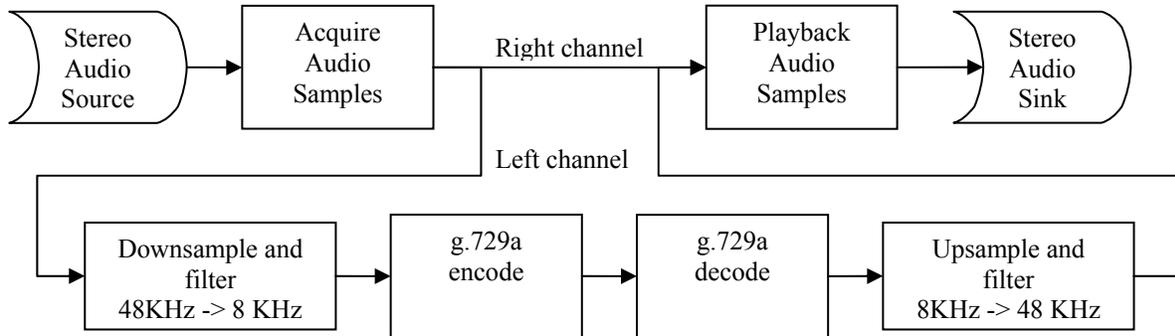


Figure 1. Simple Process Flow

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 must be set up as shown:

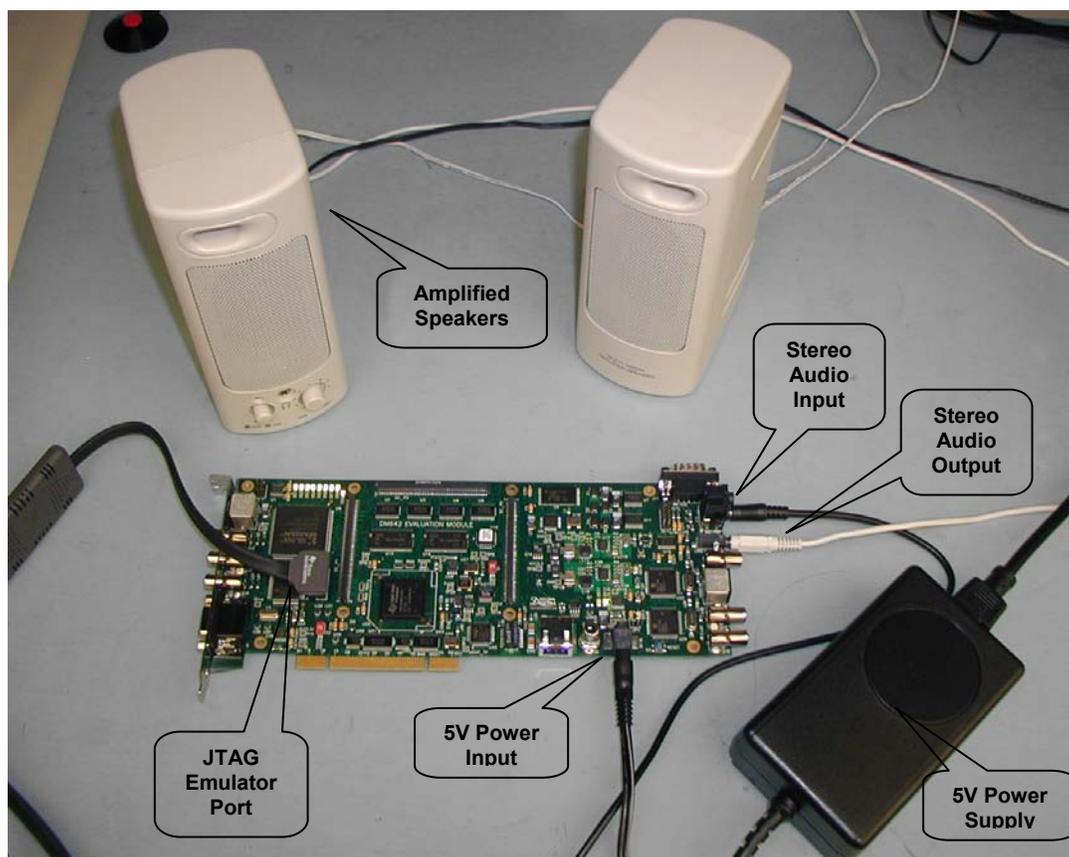


Figure 2. Hardware Setup

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

Demonstration Execution

To run the demonstration, make sure that the hardware has been set up as explained in the previous section. Then, follow these steps:

1. Power up the DM642 EVM board—the board goes through its self test and lights the orange LED at DS9, as well as LEDs DS1 through DS8.

2. Start Code Composer Studio™ IDE on your PC.
3. Reset the DM642 board using GEL -> Resets -> Reset_BreakPts_and_EMIF.
4. Load project `evmdm642_audiocodec.out` from the demo directory
`boards\evmdm642\demos\audio`.
5. Execute the program by pressing F5 or selecting Debug -> Run.
6. You should now hear the audio signal. The right channel should be unmodified; the left channel has been run through the voice codec encode/decode procedure.

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Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265

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