EP7209 Development Kit

Quick Start User's Guide

Embedded Processors Division

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Introduction

Thank you for choosing Cirrus Logic's EP7209 development kit. This quick start guide will help you get your board set up and run some of the sample programs provided on the CD-ROM. This Quick Start User's guide is intended to be a supplement to both the Software User's Guide and the Hardware User's Guide.

CD Contents

Software on the EDB7209 Development Kit CD may be freely copied to the host PC hard disk. No setup program is necessary to install the contents and the MP3 demo program described in this document may be run without installation of the software onto the host PC. However the USB driver contained on the CD will be necessary to download new music files to the demo board through the USB port. The EDB7209 Development Kit CD contains the following items:

1. MP3 evaluation software
2. Angel source code and built images
3. Sample programs written to run on the evaluation board
4. Schematics for the Evaluation Board
5. Datasheets on the major component used for the evaluation board
6. ARM SDT v2.50 development tools (60-day evaluation version)
7. Documentation for development
    - Hardware User's Guide
    - Software User's Guide
    - Application notes on the use of development tools
    - Device Errata

System Requirements

EP7209-4 development kit from Cirrus Logic, and a PC running Windows 95 or 98 with USB support.

Note: Demo boards prior to version C do not support the USB connection. To identify the version of a demo board, refer to the silk screening in the corner of the development board itself. As of November 2000 the current board version is C, indicated by EDB7209-2C.0. Versions A and B support MP3 downloads through the parallel port instead of the USB. Previous versions of the EDB7209 may be enhanced to allow USB connections, for these upgrades please refer to document USBmods.txt.

General Board Set Up

1. ARM Debug Monitor connection: Connect the supplied NULL modem cable between the "Serial 0" connector on the evaluation board and any available COM port on the host PC.
2. MP3 Audio data connection: Connect a USB cable between the board and the host. This provides a high-speed download channel for MP3 or other digital music files.
3. Sound: Connect a set of pre-amplified speakers to the line out jack of the EDB7209 demo board.
4. Power Management: Ensure all power management switches are in the down position.
5. Power: Connect the supply to the DC power connector.
6. Board initialization: Turn the power switch (next to the power connection) on, wait 2 seconds and press the URESET button followed by the WAKEUP button (both buttons are near the power management switches in the corner of the board). The green light next to the WAKEUP button lights when the installed application is running.
7. The Evaluation board has MP3 evaluation software (player.rom) preinstalled.

MP3 Evaluation Software

The MP3 evaluation software is provided by Cirrus Logic, Inc. as a vehicle to evaluate the MP3 decoder software running on the EP7209, and as an example of how to integrate the decoder into an application. This software is intended to be a small, efficient MP3 player upon which OEMs can easily build production-ready end-user applications.

MP3 Demo Features

The MP3 demo application (player.rom) has the following features/capabilities:

- Plays back MP3 and PCM files at 44.1 kHz. Files with sample rates other that 44.1 kHz will be played back at 44.1 kHz without sample rate conversion (and therefore not play at the right speed or pitch). An updated version of the demo will include a sample rate converter to properly play back all MP3 sample rates (8 kHz, 11 kHz, 12 kHz, 16 kHz, 22 kHz, 24 kHz, 32 kHz, 44 kHz, and 48 kHz).
- The MP3 or PCM file is stored in the on-board NAND FLASH; the file can therefore be up to 32 Mbytes in size.
- Uses USB to download the MP3 or PCM file to the board.
- Uses the serial port 0 to display status information.

The MP3 demo application does not have the following features/capabilities that may be necessary for an MP3 player:

- The ability to store more than one file in memory.
- The ability to seek within the file (both forward and backward).
- The ability to use removable media, such as SmartMedia.

Requirements

The MP3 demo application requires the following hardware:

- An EDB7209 board.
- A PC running Windows 95/98 with USB support.
- A USB cable. The USB cable is only required for downloading new MP3 music files.
- A NULL modem cable is optional for this application, in order to view the player status information. The null modem cable is also used to download other application programs to the demo board.

To obtain the full version of player along with the object code for MP3, please contact stravis@crystal.cirrus.com for the legal documents to sign.

Running the MP3 Demo Application

EDB7209 evaluation boards are shipped with an MP3 demo program and music preinstalled.

The MP3 demo application outputs display player status information (such as if a file is being played and the position within the file) to serial port 0 on the demo board. A terminal emulator (e.g. Hyperterm) on the host PC can be used to receive and display this status information, although the demo can be correctly run without the terminal emulator.

If Hyperterm (found at Start/Programs/Accessories/Communications) is used, configure it for the correct host PC serial port, and set the data format to 115,200 baud, 8-N-1.

If the board is not already correctly initialized, do so by turning on the power switch (next to the power connection), waiting 2 seconds and press the URESET button followed by the WAKEUP button (both buttons are near the power management switches in the corner of the board). The green light next to the WAKEUP button lights when the application is running.

If Hyperterm is being used, the "Stopped" message should be displayed on the host PC's terminal emulation program, indicating that the MP3 demo application is running.

Running the MP3 Player

There are eight buttons on the EDB7209 board, five of which are used by the MP3 demo application.

The buttons and their function are as follows:

User1 - Play - Pressing this button will start playback of the current track, or pause if the track is currently playing. Holding this button for one and one half seconds will put the player into low power mode.

User2- Stop - Pressing this button will stop playback of the current track.

User3 - Pressing this button will change the current meaning of User5 and User6, advancing backwards through the list of possible meanings. Holding this button will successively advance backwards through the meanings of User5 and User6.

User4 - Pressing this button will change the current meaning of User5 and User6, advancing forwards through the list of possible meanings. Holding this button will successively advance forwards through the meanings of User5 and User6.

User5 - Pressing this button will decrement the value of the currently selected item. For example, it will turn down the volume. If the current item is SEEK, it will skip to the beginning of the current track (if the current time is less than 3 seconds) or to the previous track (if the current time is greater than 3 seconds).

Holding this button will successively decrement the value of the current item. If the current item is SEEK, it will seek backwards within the track.

If playing Audible content and the current item is SEEK, pressing this button will return to the beginning of the current section (if the current time is greater than 3 seconds into the section) or will skip to the previous section (if the current time is less than 3 seconds). If the current time is within 3 seconds of the beginning of the track, pressing this button will skip to the previous track.

User6 - Pressing this button will increment the value of the currently selected item. For example, it will turn up the volume. If the current item is SEEK, it will skip to the next track.

Holding this button will successively increment the value of the current item. If the current item is SEEK, it will seek forwards within the track.

If playing Audible content and the current item is SEEK, pressing this button will advance to the next section. If the last section is already being played, it will advance to the next track.

Downloading Image and Music File(s) to Target

Downloading Player.rom

- Power off the board.
- Put a jumper on JP2.
- Connect the board's "serial port 0" to an available serial port on the PC with a NULL modem cable.
- Run dl_b3 crd7209b\player.rom on the PC. If the PC serial port being used is not COM1, then specify the number after the name of the ROM (i.e. dl_b3 crd7209b\player.rom 3 for COM3).
- Power on the board.
- Press the WAKEUP button on the board.
- Wait until dl_b3 says it has successfully down loaded the image.
- Power off the board.
- Remove the jumper from JP2.

Downloading Music Files

The Windows application for downloading files to the player is very similar to Windows Explorer in its operation. You can drop files on the application to download them, and you can paste files into the application. If you use the menu to "open" a file, it will be downloaded to the player. If you use the menu to "save" a file, it will be uploaded from the player and saved on your PC. At present, there is no capability to drag a file from the application or copy a file from the application to the clip-board. In order to evaluate the AudibleReady support in the player software, the "open Audible" menu item will allow you to specify the Audible information which the player itself cares about, and will download that information to the player along with a media file. The file need not contain Audible information, it can be any media file that you choose to use.

Procedure for Downloading Music Files

- Connect the USB cable to the board.

For Win95/98, the PC will detect a new external device, try to find the appropriate driver, then launch and update driver window. Move through the windows in the Update Device Driver Wizard and select "Specify a location". From the editor box, type in the directory where mavusb.sys now resides. Click Next. Windows will update the USB card with the appropriate driver.

Run mavusb.exe For release 14, this is found in .\rel14.

- Type: mavusb

This will launch a dialog window. From "File" you can open to search for .mp3/.wma etc. files and double click on the file names to load these to the board. A total of 10 songs can be down loaded to the board. The LCD screen on the CRD board will indicate downloading is in progress with an ICON and test message.

Once downloading is complete, you can use the user interface buttons to begin playing music.

Erasing Files and Unformatting Memory

Erasing files can be done by simply deleting the music icons from the mavusb dialog window. Select the file and hit delete. The other method is to unformat. The procedure is as follows:

- Power off the board.
- Put a jumper on JP2.
- Connect the board's "serial port 0" to an available serial port on the PC with a NULL modem cable.
- Run edb7209\unformat on the PC. If the PC serial port being used is not COM1, then specify the number on the command line (i.e. ebd7209\unformat 3 for COM3.
- Power on the board.
- Press the WAKEUP button on the board.
- Wait until unformat says it has successfully unformatted the NAND FLASH.
- Power off the board.
- Remove the jumper from JP2.

For first-time downloads of the player, it will set up a bad sector table. Unformat will remove this table and any other songs. This can be used to delete music or to reformat the NAND in the event that a different player software or release of the software is used.


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