USB-TV MPEG-2 Recorder/Player

CIRRUS LOGIC®

Product Brief **USB-TV CS92210 Reference Design**

Description

The USB-TV CS92210 Reference Design is a USB dongle peripheral that makes it easy to capture and playback audio, video, and television signals on Microsoft Windows based personal computers equipped with USB ports.   The USB-TV design can output MPEG video to either the computer display or a standard NTSC/PAL video monitor. Typical USB-TV applications include:

- Audio/Video Capture/Playback
- Still Image Capture
- TV Watching
- TV Timeshifting
- VCD/SVCD/ software DVD Playback
- VCD/SVCD/DVD Creation
- Video Editing
- Video Email
- Video Conferencing
- Video Surveillance
- Large screen presentations

The main hardware components of the USB-TV board are a NTSC/PAL TV/FM tuner, Philips SAA7121 NTSC/PAL video encoder, Philips SAA7114 video decoder, the CS92210 video codec, a Cypress EZ-USB *FX*TM USB controller, an analog audio multiplexor, and IR sensor for optional remote control.

The NTSC/PAL video decoder and encoder interface gluelessly to the CS92210's video port using ITU-R BT.601 and ITU-R BT.656 digital video data formats.
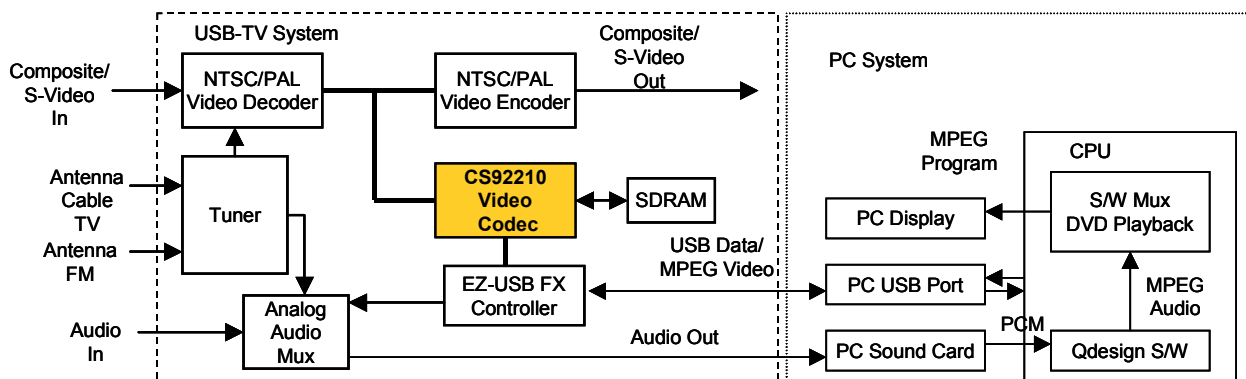
The CS92210's host interface connects gluelessly to the Cypress USB controller for transferring MPEG-2 compressed video over the USB cable.

The Audio multiplexor selects analog mono or stereo audio output from three different sources: mono audio from the TV tuner, stereo FM audio from the TV Tuner, and stereo audio from an external source.

Features

- Complete CS92210 based USB reference design for MPEG-1 or MPEG-2 audio/video encoding/decoding
- Patent pending frame accurate A/V sync technology uses the PC's existing audio subsystem to encode audio resulting in a lower system cost with no loss of A/V synchronization
- Includes Hardware, Software, Firmware, Schematics, Gerbers, Layout, BOM files and documentation
- NTSC and PAL Support
- TV Tuner with FM Audio
- NTSC and PAL output of MPEG-1 and MPEG-2 video enables use of large screen displays
- Computer display of MPEG-1 and MPEG-2 video (requires DVD decoder software and license)
- Composite and S-Video inputs and outputs
- Real-time two channel MPEG (Layer II) audio encoding/decoding

- Real-time two channel PCM audio encoding/decoding
- Real-time MPEG-1 video encoding/decoding
- Real-time MPEG-2 ML @ MP video encoding/decoding
- Cypress EZ-USB FX Controller
- Philips SAA7114 and SAA7121 video D/A and A/D
- Multi-channel, cable ready TV tuner covers the band range 55.25 MHz to 801.25 MHz
- Stereo-FM tuner covers the band range 76.0 MHz to 108 MHz
- 38 kHz IR sensor and NEC protocol decoder with UART interface for optional remote control (requires driver and application software)
- MPEG audio compression (Layer II) using Qdesign iMedia MPEG Pro software (requires license)
- Software-based multiplexing and demultiplexing of audio/video bit streams
- Enables fast development of aggressively priced USB-based TV tuner and video capture devices

System Block Diagram

EZ-USB *FX* is a trademark of Cypress Semiconductor Corporation

System Requirements

The minimum system requirements for the USB-TV CS92210 Reference Design Kit are:

- Intel 400MHz Pentium II/AMD 500MHz K6-2
- Windows 98/98SE/ME
- 64MB minimum RAM
- 60MB free hard disk drive space (Time shifting applications will require significantly more space)
- Graphic accelerator with DirectDraw Overlay Support (AGP recommended)
- SVGA monitor (800x600)
- 44khz 16-bit sound card
- USB 1.X port

Software Licenses

The USB-TV Reference Design Kit includes evaluation software licenses for Qdesign and Cyberlink. It is the manufacturers' responsibility to contact both companies and acquire the appropriate number of OEM software licenses when manufacturing and selling products based on the USB-TV design. The following softcopy license agreements are located on the USB-TV SW Reference CD:

- Qdesign OEM License Agreement
- S/W DVD Decoder OEM License Agreement

Deliverables

- o USB-TV HW Module
- o USB Cable
- o Power Supply
- o USB-TV HW Reference CD containing:
    - o Schematics (Orcad)
    - o Gerbers
    - o Job/Layout Files (PADS)
    - o Bill of Materials (MS Excel)
- o USB-TV SW Reference CD containing
    - o Windows 98 WDM Driver
    - o Visual Basic Demo Application
    - o Demo Application Source Code
    - o Release/Application Notes
    - o OEM Copy of CyberLink PowerDVD
    - o S/W DVD Decoder OEM License (PDF Format)
    - o Qdesign OEM License (PDF Format)
- o USB-TV Technical Manual
- o CS92210 Data Sheet
- o USB-TV Quick Start Guide

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