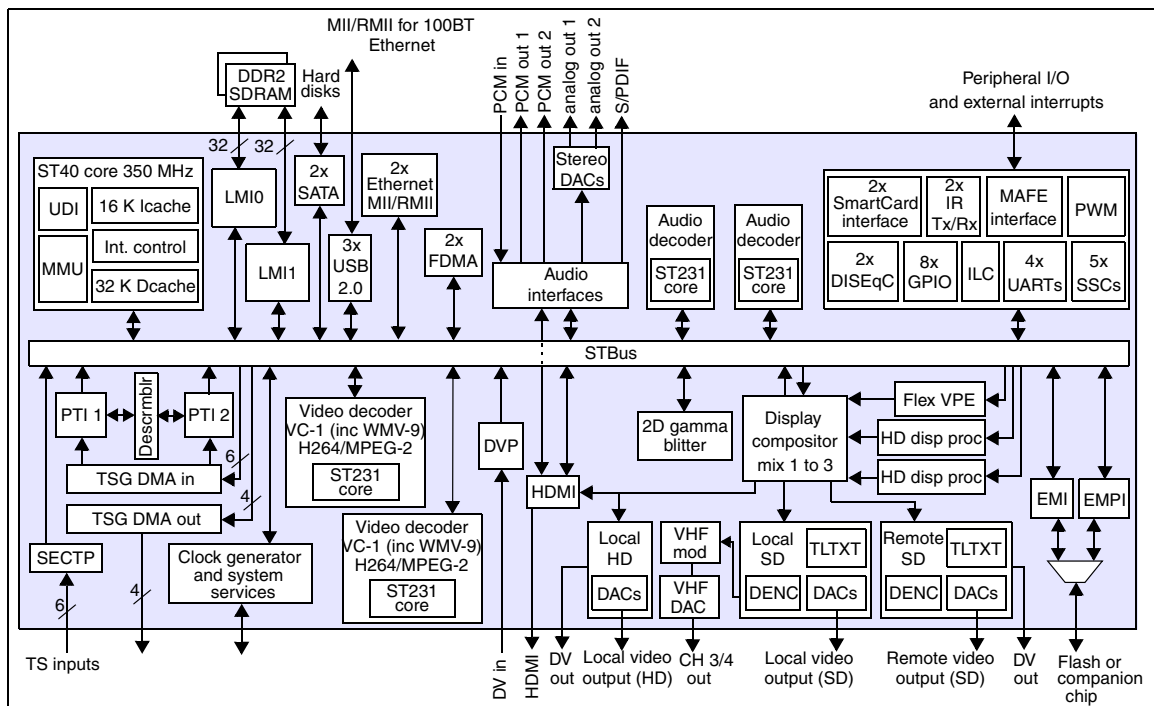# STi7200

Triple display, HDTV set-top box, dual decoder for H.264 and VC-1

Data Brief

Features

- Single-chip, high-definition STB decoder:
  - H.264 and Microsoft® VC-1 compatible
  - Linux®, Windows® CE and OS21 compatible 350 MHz ST40 CPU core
  - supports NAND flash, NOR flash and Sflash
  - local memory 2 x DDR2 333 MHz
  - transport filtering and descrambling
  - dual H.264, MPEG-2, VC-1 video decoding
  - SVP compliant
  - Windows® DRM support
  - triple display composition
  - integrated VHF channel 3/4 modulator
  - dual audio decoder, including Windows Media® Audio 9 (WMA-9) and WMA-9 Pro
  - DVD data retrieval and decryption

  - HD DVD/BD compliant
  - DVR capable
  - HDMI/HDCP interface with CEC line controller
  - IQI (Image Quality Improvement) support
- Connectivity:
  - triple USB 2.0 host controller/PHY interface
  - digital audio and video auxiliary inputs
  - low-cost modem support
  - dual 100BT ethernet controller, MAC and MII/RMII interface for external PHY
  - dual serial ATA (SATA)
  - high speed synchronous interface (MPX) to STVi498 cable and DOCSIS front-end chip

For further information contact your local STMicroelectronics sales office.

www.st.com

1 Description

The STi7200 is a new generation, high-definition set-top box/DVD decoder chip, and provides very high performance for low-cost HD systems. With enhanced performance over the STx7109, it includes both Windows Media Video 9 and H.264 video decoders for new, low bitrate applications. The STi7200 is able to decode two HD programs.

Based on the STBus architecture, this system-on-chip is a full back-end processor for digital terrestrial, satellite, cable and IP high-definition set-top boxes, compliant with ATSC, SMPTE VC-1, DVB, DIRECTV, DCII, OpenCable and ARIB BS4 specifications. The STi7200 includes all processing for DVD applications.

2 Applications

The STi7200 demultiplexes, decrypts and decodes HD or SD video streams with associated multichannel audio. Video is output to three independently formatted displays:

● a full resolution display intended for a local HDTV monitor,

● a downsampled display intended for a VCR or local SDTV,

● an SD resolution display intended for a remote SDTV monitor.

Connection to the main TV or display panel can be analog (RGB/YUV) through HD DACs, or digital through a copy protected DVI/HDMI. Composite outputs are provided for connection to local and remote TVs or VCR with Macrovision or Dwight Cavendish protection.

Audio is output with optional PCM mixing to an S/PDIF interface, dual PCM interface, or through integrated dual stereo audio DACs.

Digitized analog programs can also be input to the STi7200 for reformatting and display.

The STi7200 includes a graphics rendering and display capability with a 2D graphics accelerator. A triple display compositor mixes graphics and video with independent composition for each of the TV and VCR or SDTV outputs. Picture In Picture (PIP) is supported.

The STi7200 handles up to six external transport streams from different sources.

Four transport stream inputs, two transport stream input/outputs and two transport stream outputs are supported. Applications include DVR time-shifted viewing of a terrestrial program, while acquiring an EPG/data stream from a satellite or cable front end.

The transport architecure uncouples the transport packet processing from the transport packet collection. The input transport streams are stored in SDRAM after PID filtering and time stamp collection. DMAs fetch data from external memory and inject them to PTIs or transport stream output ports.

The flexible descrambling engine is compatible with required standards including DVB, DES, AES and Multi2.

The STi7200 has a *350* MHz ST40-210 CPU for applications and device control. A dual 32-bit DDR2 SDRAM interface provides the required bandwidth for dual HD VC-1/H.264 video decoding, and for the CPU and the rest of the system.

A second memory bus is provided for flash memory, storing resident software, and for connection of peripherals. This bus also has a high speed synchronous mode that can be used to exchange data between two STi7200 devices.

A 32-bit MPX initiator (EMI module) and target (EMPI module) interconnect external devices such as the STVi498.

A Blu-ray disc and hard disk drive (HDD) can be connected through the serial ATA interfaces (2x). An expansion hard disk drive can be connected through a USB 2.0 port (3x). See *Figure 4*.

For IP-TV and home network applications, the two integrated 100BT Ethernet controllers with MII/RMII interface can be used for IP delivery and distribution, as shown in *Figure 1*.

The USB or Ethernet interfaces can also be used to connect to a DOCSIS 2.0 CM gateway for interactive cable applications.

The STi7200 is supported by STMicroelectronics' STAPI software.

Figure 1.   Low-cost HD IP-TV set-top box with hard disk drives
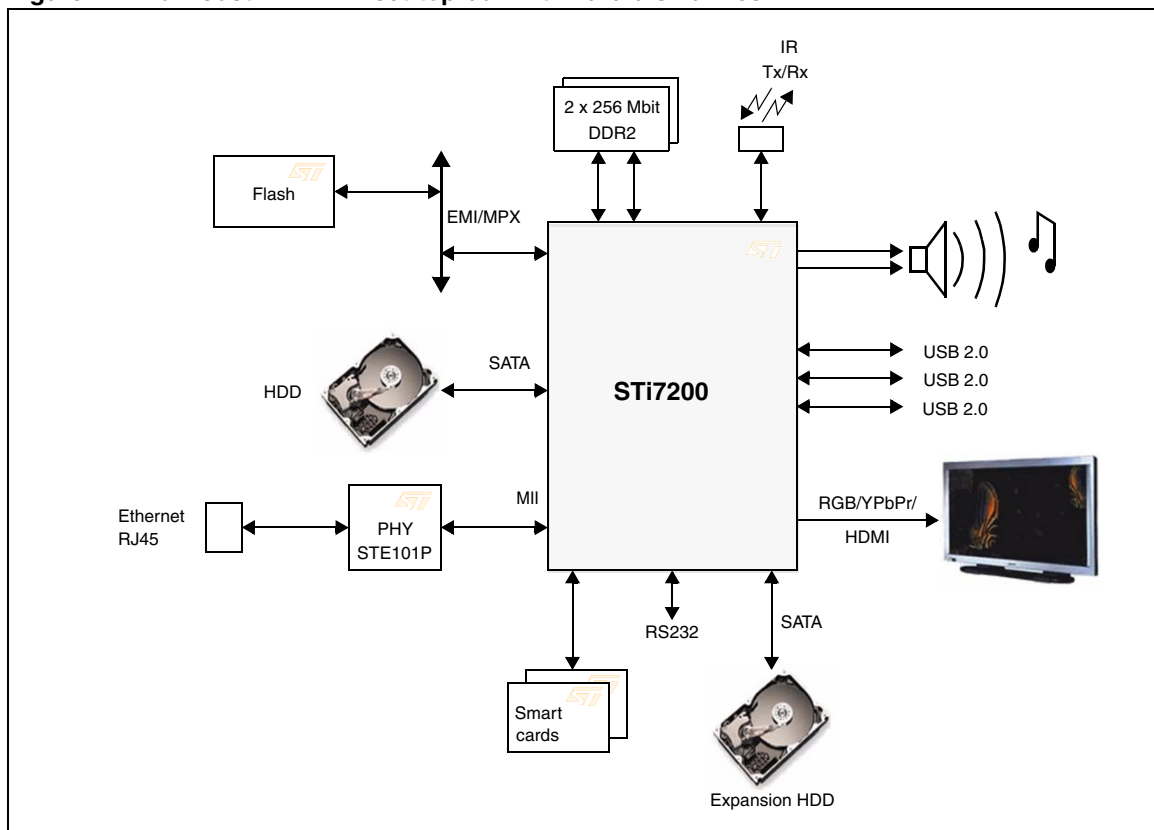
Figure 2.   HD DOCSIS cable set-top box with HDD
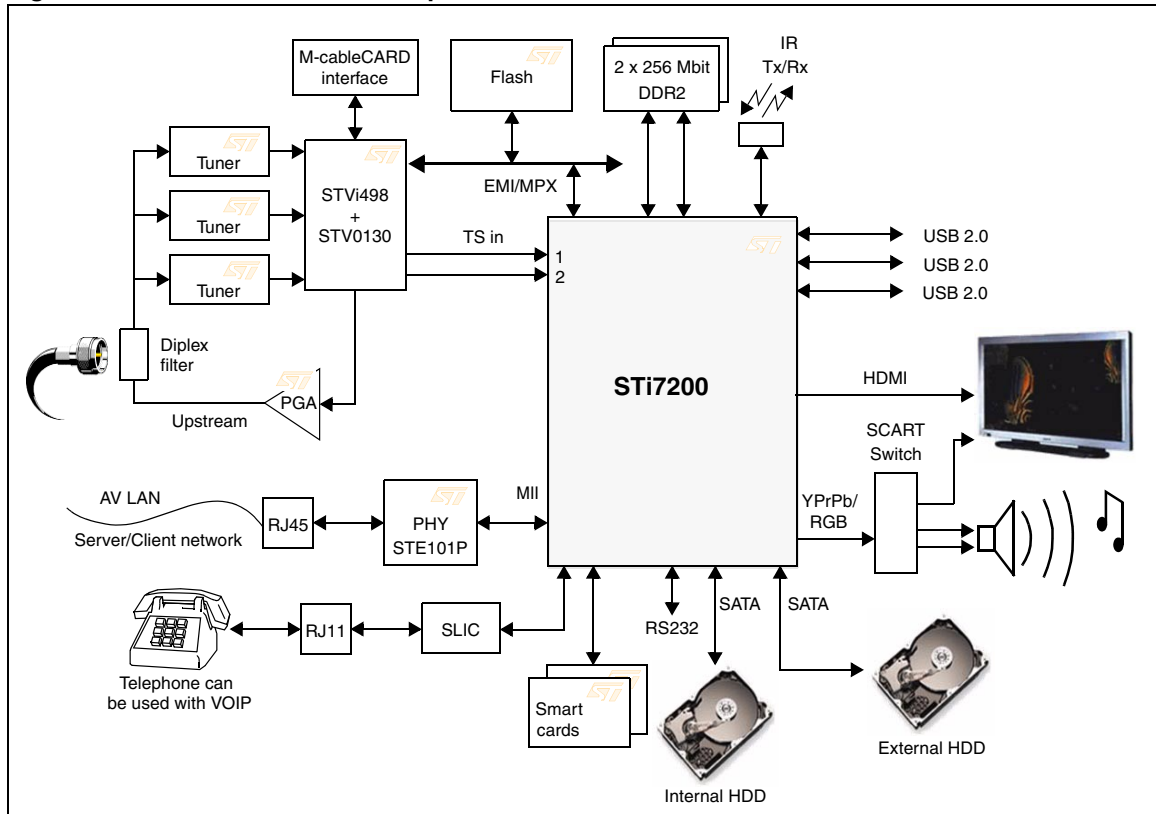
Figure 3.   Low-cost satellite TV set-top box
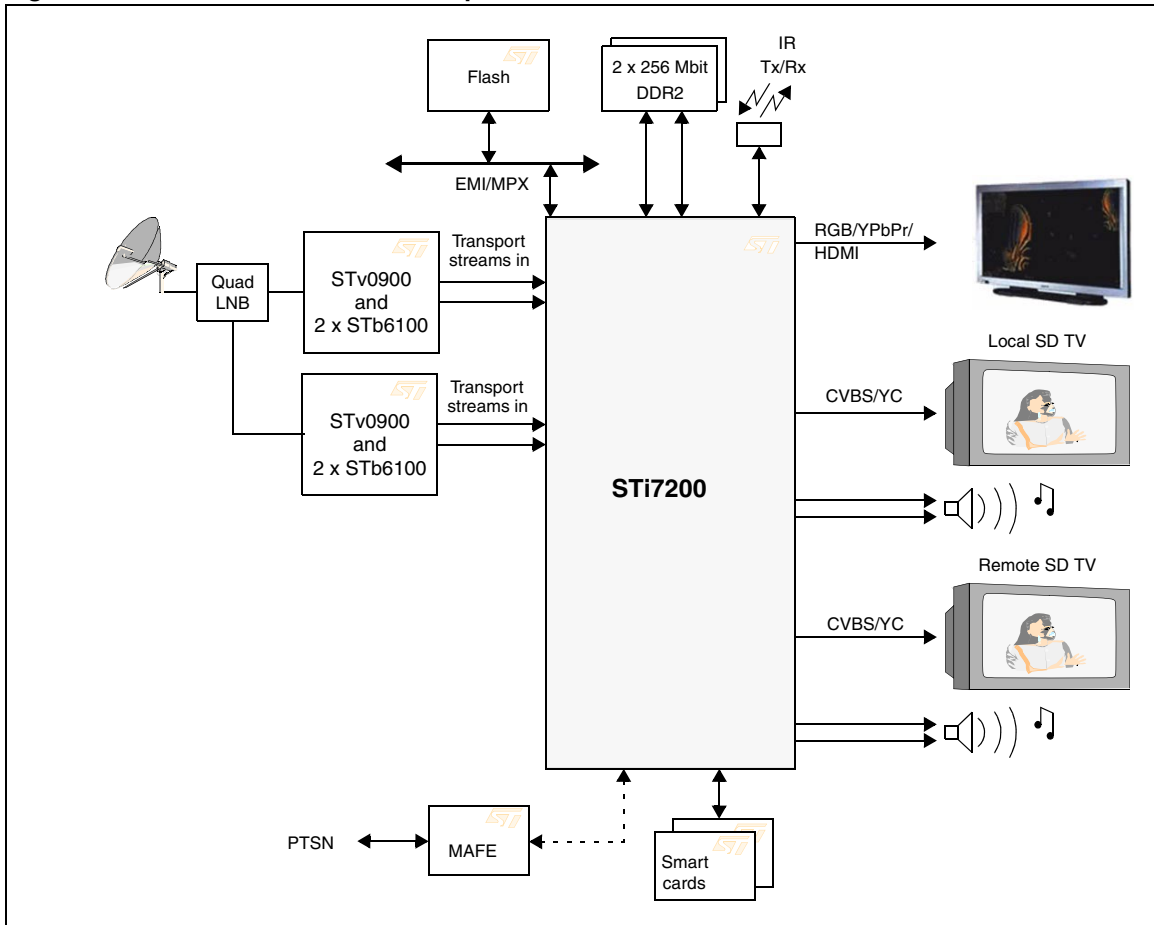
Figure 4.   HD DVD/BD (blue laser disc) player system
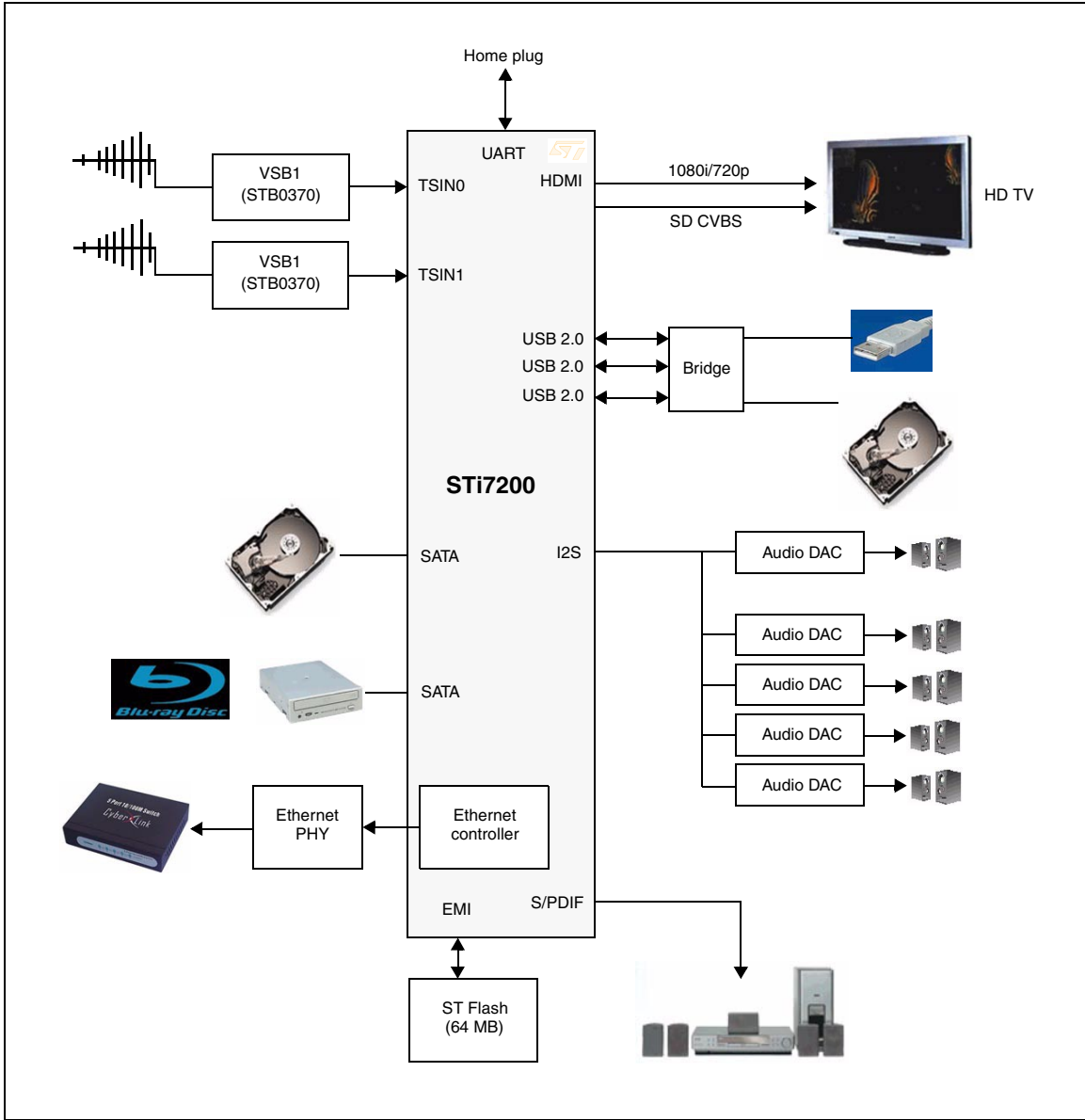
3 Revision history

Table 1. Document revision history

Date	Revision	Changes
07-Dec-2006	1	Initial release.

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