MPEG-4 HD, DVR-Ready, Hybrid STB Solution

Based on EMMA3SL/P

Renesas Electronics' DVB-S2 MPEG-4 high definition hybrid STB reference solution with enhanced connectivity features is a complete hardware and software platform based on Renesas' H.264 decoder EMMA3SL/P (µPD6132x), DVB-S2 tuner (µPD61618), DVB-S2 channel decoder (µPD61616), DVB-T channel decoder (µPD61541) and 78K microcontroller (µPD780503).

Renesas' reference solution incorporates the advanced security features of the EMMA3SL/P IC defined to meet the most stringent security demands of conditional access companies. The reference design enables, in a short and secured time to market, the creation of a cost, performance and power consumption optimized MPEG-4 high definition DVB-S2 or DVB-T hybrid STB with enhanced connectivity features.

Key Benefits:

Flexibility to balance time to market, R&D cost and software royalties.

- Options to reduce time to market and R&D expense:
  » Complete hardware kit, from schematics and material list up to PCB layout, close to production level, available from Renesas.
  » Turnkey software or turnkey hardware + software available from Renesas experienced design partners (with options for user interface adaption).
- Options to reduce product cost:
  » Free RTOS and low level software packages API available from Renesas.
  » Linux EMMA Distribution available from Renesas.

Block Diagram
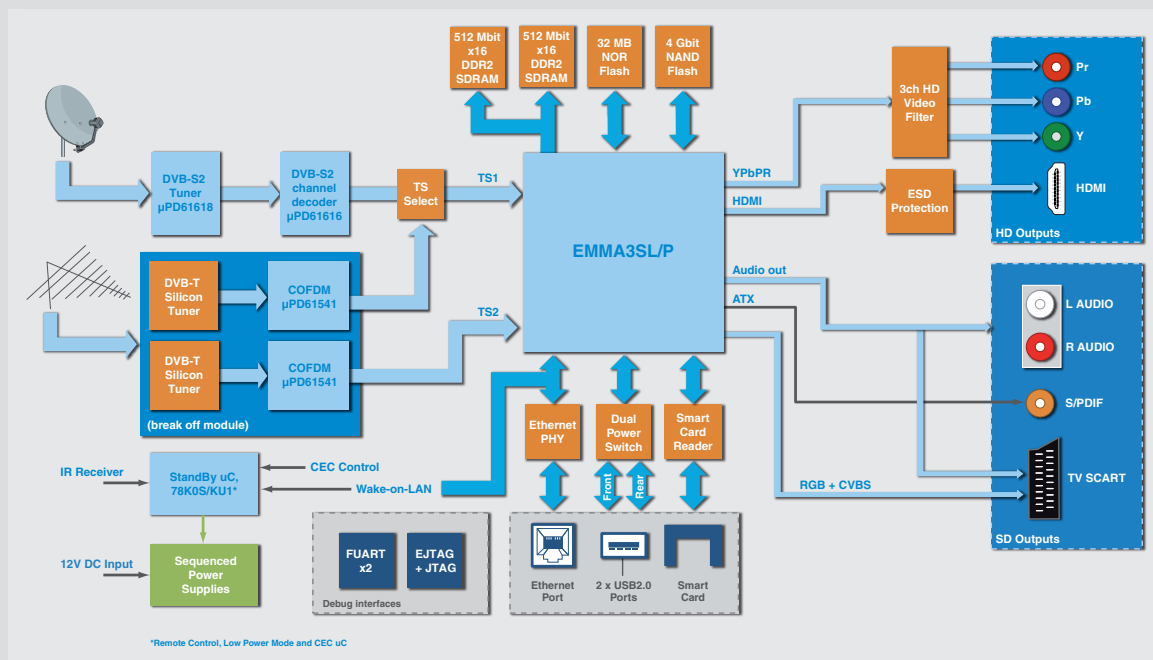
Key Features:

- Latest High Definition MPEG-4 Decoding format including H.264, VC-1 and DivX (option)
- Advanced security for Pay TV secure STB application (option)
- 2 x USB2.0 ports suitable for DVR-Ready solutions
- All main audio formats likely to be broadcasted (MPEG-4 AAC (option), AC3 (option), AC3+ (option), HE-AAC and WMA), audio description, DD+ to DD, HE-AAC to DD or DTS transcode
- NTSC, PAL and SECAM video standards including PAL-M, PAL-N and PAL-Nc
- HDMI 1.3 with HDCP Tx supporting up to 1080p output
- 10/100 Base-T Ethernet interface with Wake-on-LAN for push VoD services
- Low power mode and CEC control using Renesas' ultra low cost 78K microcontroller
- Full Linux distribution

Reference Design Description

- System Specification
  - » DVB processor: EMMA3SL/P (µPD6132x) with Dual CPUs giving 990 MIPS processing power
  - » Low power mode and CEC control uC µPD78F0503
  - » Low power DVB-S2 receiver using:
    - DVB-S2 tuner (µPD61618)
    - DVB-S2 channel decoder (µPD61616)
    - support for DiSEqC™ 2.x
  - » Dual Low Power DVB-T Silicon Tuners (breakable board) using COFDM Channel Decoder: µPD61541
  - » Memory System
    - – 32 Mbytes NOR Flash
    - – 4 Gbits NAND Flash
    - – 2x 512 Mbit x 16b DDR2
- Optimized hardware design
  - » 4 layers PCB
  - » Debug: EJTAG or JTAG
  - » FUART
- Power Supply
  - » +12 V DC power supply in from external AC/DC PSU
- » DVB-T RF in, RF out
- » Coaxial L + R analogue audio output
- » SPDIF digital audio output
- » HD digital video output: HDMI1.3
- » HD Component Video: Y/Pb/Pr
- » TV SCART: RGB, CVBS and audio
- » Front and rear USB2.0 Ports
- » 1 x 10/100 Base-T Ethernet
- » 1 smart card interface
- Software
  - » Free RTOS, Linux kernel and low level drivers from Renesas
  - » DVR-ready drivers (with trick modes)
  - » Free 78K uC software example for low power mode and CEC control from Renesas
  - » Option
    - – complete and validated application software
    - – customizable user interface
    - – 7 days EPG
    - – MHEG 1.0.6

Deliverables

The kit can be supplied as	Reference hardware (guide for in-house design): hardware database, driver software from Renesas, demonstration software
Hardware	Main PCB Schematics Layout and Gerbers
Software	Renesas low level driver code and EMMA Linux distribution (under license)

Documentation	EMMA3SL/P device µPD6132x	S19934EE1V0PL00
	DVB-S2 front end (µPD61618, µPD61616)	S20230EE1V0PB00
	COFDM µPD61541	S18959EE1V0PL00
	Microcontroller 78K0/KB2	U17425EE1V0PL00

Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

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