



## NXP PCI Express dual-channel, hybrid (DVB-T/PAL) PC TV reference design PCV520/20

# Watch and record TV on PCs

The highly integrated PCI Express dual-channel, hybrid (DVB-T/PAL) PC TV reference design PCV520/20 dramatically lowers the cost and space required to add TV reception and PVR features to multimedia and media center PCs.

### Key features

- Independent dual-stream architecture enables watch-and-record, watch/watch, listen/record, and more
- Digital (DVB-T) and worldwide analog (PAL, NTSC, and SECAM) TV reception, FM radio reception, A/V capture from CE devices such as camcorders, VCRs, etc.
- Integrated video and audio encoding supports personal video recording (PVR), time-shift, and archive features (with host PC)
- Complete reference design includes low-profile PCIe reference card, drivers, and full documentation
- RC receiver and transmitter interfaces control TV and record functions
- Supported on the latest Windows operating systems, including 64-bit driver
- Multi-level content protection
- Vibrant picture quality through integrated motion adaptive 3D comb filters and 3D noise reduction for both channels

Based on the SAA7164 PC TV IC, the PCV520/20's dual-stream architecture supports tuning, demodulation, analog TV video/stereo decoding, transport stream capture, digital video capture and digital encoding of two independent A/V channels simultaneously — all on a low-profile PCIe card. PCV520/20 lets consumers enjoy their favorite digital and analog TV channels while using the latest PVR features in a wide range of combinations such as:

- view two TV channels (analog or digital) at the same time using Picture-in-Picture, split screen, and watch/search modes
- watch one TV channel and record a second channel or video source
- record two channels or video sources
- listen to FM radio and record a TV program or any video source, and more.

Other PCV520/20 features include vertical blanking interval (VBI) extraction and remote control support for TV and record-

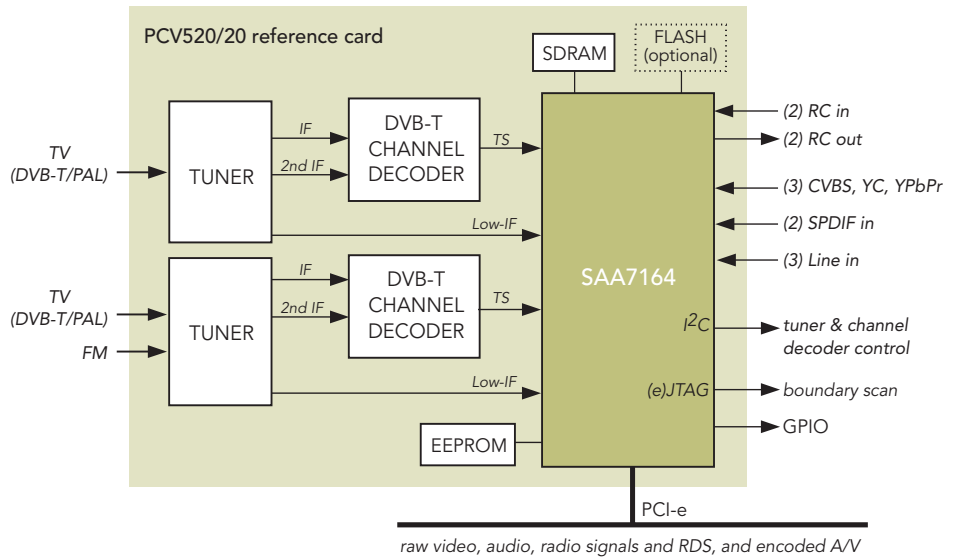
ing functions. Multi-layer content protection includes certified Macrovision® detection circuitry, CGMS-A extraction, and support for the Microsoft Protected Broadcast Driver Architecture (PBDA).

### Exceptional integration, lowest BOM

The PCV520/20's exceptionally high integration results in the lowest bill of materials available. After the signals (DVB-T, PAL/NTSC/SECAM or FM radio) are received by two high-quality NXP TDA18271HD silicon tuners, two NXP TDA10048HN channel decoders demodulate the IF signals and deliver transport streams to the SAA7164. The decoder applies the most advanced filtering techniques and dynamic echo cancellation systems to ensure high-quality reception under the most demanding conditions. The SAA7164 demodulates and decodes two independent channels of broadcast TV video and stereo and encodes video and audio for recording applications. The

SAA7164 also handles picture enhancements and high-quality scaling to prepare video for display. No RF or SAW filters or dedicated crystal oscillators are required.

PCV520/20 is supported on the latest Windows operating systems and with popular third-party TV/PVR applications. Reference board setup and control is handled through the Windows WDM driver AVStream Class with BDA Extensions.



## Specifications

### PCV520/20 includes

- Low-profile PCIe reference card
- Front bay assembly
- Drivers
- User manual, schematics, BOM, Gerber files, documentation

### SAA7164 SoC

- Worldwide analog TV video decoding standards: PAL BGDHIN, PAL M, Combination PAL N, NTSC M, NTSC Japan, NTSC 4.43, SECAM L/L'
- Worldwide analog TV sound decoding standards: BTSC with dbx™ noise reduction, SAP, EIAJ, NICAM, FM A2, FM radio
- A/V encode: H.263, MPEG-1/2/4, WMV, DivX, and AAC-LC
- Audio formats MP3, MPEG1L2, Dolby Digital® (2-channel)
- Worldwide VBI text and data services
- 3D comp and 3D noise
- CVBS, S-Video and component processing

### TDA18271 silicon tuners

- Worldwide analog and terrestrial digital TV standards (PAL, SECAM, NTSC, DVB-T, DVB-C, ATSC and ISDBT)
- Meets CENELEC, NORDIG unified
- Fully integrated RF tracking filters
- Fully integrated IF selectivity
- Alignment-free
- Fully integrated oscillators
- Integrated wideband gain control
- 16 MHz XTAL oscillator output buffer

### TDA10048HN channel decoders

- COFDM
- 2K and 8K DVB-T demodulator, fully ETSI 300-744-compliant
- 48-pin HVQFN package, 7x7mm wide
- Ultra fast scanning, TV channel-zapping
- Consolidated 'Pulse Killer' algorithm for impulsive noise reduction
- Dedicated filters for reliable reception in presence of inter-symbol, adjacent, and co-channel interference

- Exceeds Nordig unified and D-Book
- 160 mW consumption supports eco-friendly or battery-powered designs

### Other components

- One RF multiplexer circuit-switched supply regulator (for on-board voltages)
- Two separate IR transceiver circuits
- 32-MB DDR SDRAM
- Footprint for STM25P32 4-MB serial Flash memory (part not included)

### Operating systems

- Microsoft Windows XP, Windows MCE 2005 and Windows Vista (including 64-bit support)

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