

## SDI, HD-SDI, Dual Link, 3G-SDI (Level A & B) & DVB-ASI Reference Designs for Xilinx FPGAs



### Industry challenges

- Reduce cost-per-channel for standard video interfaces
- Support multiple channels in least number of devices
- Maintain highest quality of jitter performance

### Xilinx solutions

- Free reference designs for serial digital video
- Non-trivial translation between 3G-SDI and Dual Link HD-SDI or between 3G-SDI Levels A & B
- Industry-leading signal integrity
- Easy to integrate into your own FPGA system designs
- Reduce or remove cost and high power of external ASSPs

### Leveraging high speed I/O to support all your broadcast connectivity needs

The integration of high speed SelectIO and multi-gigabit serial transceivers into Xilinx FPGAs enables support for a variety of traditional broadcast video connectivity standards including SD-SDI, HD-SDI, DVB-ASI, Dual Link HD-SDI and emerging 3G-SDI interfaces. In addition, Xilinx offers Triple-Rate SDI designs (SD/HD/3G-SDI) using a single MGT. The design supports dynamic switching between standards for transmit or receive, with automatic standard detection and without reprogramming the FPGA.

### Reduce cost-per-channel for HD and SD connectivity by up to 80%

These standards offer high-bandwidth transmission between various video applications in the front-end, studio, or editing suite. They reduce material costs, particularly when there's a need for multiple channels. Integrating the network protocols into a Xilinx FPGA also lowers other system costs.

### Video and Audio Connectivity Reference Designs and Verification Platforms

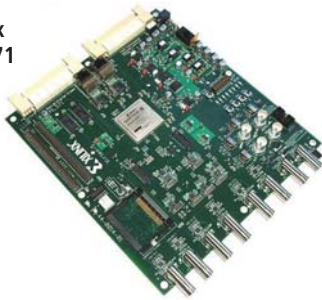
Platforms for Virtex®-5 and Spartan®-3 FPGAs are available with these reference designs to demonstrate their performance and enable broadcast equipment engineers to focus on the differentiating part of their system rather than the difficult challenges of supporting multiple SDI rates and formats. Both platforms are used for characterization purposes and to verify the excellent receiver tolerance to jitter and output jitter performance which are both well ahead of the SMPTE specified requirements.

## Standards Supported by Xilinx Reference Designs

Function	Standards Supported	Formats
SD-SDI	SMPTE 259M, SMPTE 344M	PAL NTSC
HD-SDI	SMPTE 292M, SMPTE 274M; SMPTE 296M; SMPTE 260M; SMPTE 295M	All standard HD-SDI compatible formats
Dual Link HD-SDI	SMPTE 372M, SMPTE 274M	All 1080-line video formats compatible with SMPTE 372M
3G-SDI	SMPTE 424M, SMPTE 425M	All video formats compatible level A and level B of SMPTE 425M
DVB-ASI	EN 50083-9	

## Hardware Platforms

**Xilinx  
ML571**



**Cook Technologies  
CTXIL206**



## Device Family Compatibility

Function	Virtex-5	Virtex-4	Virtex-II Pro	Spartan-3
SDI Tx	✓	✓	✓	✓
SDI Rx	✓	✓	✓	✓
HD-SDI Tx	✓		✓	
HD-SDI Rx	✓		✓	
Dual Link HD-SDI Tx	✓			
Dual Link HD-SDI Rx	✓			
3G-SDI Level A & B Tx	✓			
3G-SDI Level A & B Rx	✓			
Triple-rate SD/HD/3G-SDI Tx	✓			
Triple-rate SD/HD/3G-SDI Rx	✓			
DVB-ASI Tx	✓	✓	✓	✓
DVB-ASI Rx	✓	✓	✓	✓

\* Depending on full-featured mode (packs/unpacks video) or light mode (just receives stream) and whether features such as EDH are required

The data in the tables above is only a small representation of the work Xilinx has undertaken to remove the burden of broadcast video and audio interface design from the hardware engineer. In fact, many more reference designs are available including pass through and multi-rate (SD/HD), SDI and ASI through LVDS or Multi-Gigabit Transceivers, conversion between Dual Link and 3G-SDI and between levels A and B of the 3G-SDI standard. In addition to the serial video interface reference designs, Xilinx also provides a number of complementary audio designs supporting HD-SDI audio embedding & de-embedding, as well as audio sample rate conversion.

# TAKE THE NEXT STEP

Visit us online at <http://www.xilinx.com/broadcast>

## Corporate Headquarters

Xilinx, Inc.  
2100 Logic Drive  
San Jose, CA 95124  
Tel: 408-559-7778  
Fax: 408-559-7114  
Web: [www.xilinx.com](http://www.xilinx.com)

## Europe Headquarters

Xilinx Ireland  
One Logic Drive  
Citywest Business Campus  
Saggart, County Dublin  
Ireland  
Tel: +353-1-464-0311  
Fax: +353-1-464-0324  
Web: [www.xilinx.com](http://www.xilinx.com)

## Japan

Xilinx KK  
Art Village Osaki Central Tower 4F  
1-2-2 Osaki, Shinagawa-Ku  
Tokyo 141-0032 Japan  
Phone: +81-36744-7777  
Fax: +81-3-5436-0532  
Web: [japan.xilinx.com](http://japan.xilinx.com)

## Asia Pacific Pte. Ltd.

Xilinx, Asia Pacific  
5 Changi Business Park  
Singapore 486040  
Tel: (65) 6407-3000  
Fax: (65) 6789-8886  
Web: [www.xilinx.com](http://www.xilinx.com)

 **XILINX®**  
[www.xilinx.com](http://www.xilinx.com)

Copyright © 2008 Xilinx, Inc. All rights reserved. XILINX, the Xilinx Logo, and other designated brands included herein are trademarks of Xilinx, Inc. All other trademarks are the property of their respective owners.

Printed in U.S.A. PN 2077-2