Spartan®-6 FPGA Broadcast Connectivity Kit FAQ

General Questions

Q: What is the Spartan®-6 FPGA Broadcast Connectivity Kit?

A: *The Spartan-6 FPGA Broadcast Connectivity Video Kit (S6BCK) consists of a Spartan-6 LX150T base board, an SD/HD/3G-SDI FMC (FPGA Mezzanine Card) daughter card, a device locked version of the Xilinx® ISE® Design Suite Embedded Edition, documentation including a Getting Started Guide, a Xilinx Platform Cable USB-II and video cables to quickly get started.*

Q: Who makes the S6BCK?

A: *The S6BCK is manufactured and distributed by Inrevium, a Tokyo Electron Device Ltd. Company (TED). The S6BCK is also available from TED distributors in regions outside of Japan. Please see the TED product webpage for more details:*
http://www.inrevium.jp/eng/x-fpga-board/tb-6s-bck.html

Q: When is the S6BCK available?

A: *The S6BCK is available to pre-order now and should be available for shipping in April 2011.*

Q: Are there any special promotions associated with the S6BCK?

A: *Customers who order the S6BCK at the NAB tradeshow in Las Vegas, April 9-14, 2011 will receive a special discount. Xilinx will be exhibiting at Booth N3722.*

Q: How much is the S6BCK?

A: *The S6BCK has a suggested resale price of $1,995. Display interface FMC cards (DisplayPort, HDMI, V-by-One) may be purchased individually directly from TED*

Q: Who is the kit designed for?

A: *The S6BCK is primarily aimed at all broadcast equipment designers and development engineers working in the professional and high end audio and video markets. It is a platform that can be used for research and development of a variety of interfaces and algorithms used in cameras and camcorders, production switchers and routers, encoders and IRDs, post production graphics, digital cinema, monitoring, transmitters and video over communications networks. It can also be used in other audio and video markets, from high-end consumer displays to medical imaging, from aircraft simulators to surveillance command and control operations.*

Q: How is the kit used and what are its application benefits?

A: *The main purpose of the kit is to successfully evaluate and integrate pre-verified video and audio interfaces into your FPGA-based design. This could be bringing to other video interfaces like HDMI and DisplayPort or integrating multiple SDI interfaces alongside your video processing algorithm. However, the kit can offer much more, being capable of a quick test platform in lab environments for your own IP development and then integrating into a separate larger system, or being a general prototyping vehicle for all kinds of video and audio codecs and processing algorithms.*

Q: What is included in the kit?

A: The Spartan-6 Broadcast Connectivity Kit is shipped with:

RoHS compliant Spartan-6 LX 150T-based video evaluation base board
- *FMC card supporting four bidirectional channels of triple-rate SDI (SD/HD/3G-SDI)*

ISE Design Suite: Embedded Edition (device-locked for the Spartan-6 LX150T FPGA)
- *ISE & XPS design suites for FPGA design implementation*
- *Planahead™ Design Analysis Tool – Streamline your design process between synthesis and place-and-route as well as providing intuitive IO planning*
- *Timing Driven Place and Route – Delivers optimal quality of results with advanced implementation algorithms*
- *SmartGuide™ - Delivers industry's fastest incremental implement runtimes*
- *SmartXplorer Technology – Leverage computing resources for optimal quality of results*
- *ISE Simulator – Integrated RTL simulation environment*
- *ChipScope™ Pro and ChipScope Pro Serial IO Toolkit – Perform on-chip design verification for logic and serial connectivity analysis and measurement.*

Documentation:
- *Hardware Setup Guide – Easy to follow instructions for getting your development board up and running in minutes so you can begin evaluation*
- *Getting Started Guide – Complete instructions enabling you to evaluate and modify designs included in your evaluation kit*
- *Hardware Users Guide – Detailed guide providing information about the hardware included in your kit*
- *Reference Design and Example User Guide – Instructions for using the included reference design and design examples included in your kit.*

Power supply and cables
- *Xilinx Platform Cable USB-II*
- *Two DIN1.0/2.3-to-BNC Cables*

Hardware Related Questions

Q: Will other FMC daughter cards work with the CVK?
A: The S6BCK will also support audio and display interface FMC cards from TED, including AES Audio, DisplayPort, HDMI1.3a and 1.4, DVI, LVDS and V-by-One HS.
While any FMCs developed according to the Xilinx FMC standard (ANSI VITA 57.1-2008) should work with the S6BCK base board, only TED FMCs have so far been validated to work with the S6BCK.
We have done limited testing of the CTXIL671 FMC from Cook Technologies with the TED S6BCK base board to offer a broadcast connectivity kit with more channels and features, for instance supporting AES10 audio, multiple channels of triple-rate SDI in and out, clock modules for reference clock generation and jitter clean up, as well as offering expansion slot for bridging to other FMC cards also needing the HPC FMC connector (e.g.DisplayPort)

Q: **What speed grade Spartan-6 LX150T is on the board?**

A: Kits will ship with -3C speed/temp grade devices. This is the required minimum speed grade to support triple-rate SDI.

Q: Can I upgrade to a larger or faster device with the same footprint?
A: Yes, you can but to do so voids the warranty and support for the board will not be provided

Q: What is the maximum size of the on-board DDR3?
A: The base board contains DDR3 SDRAM at 800Mbps (3 banks, 16 bit).

Q: What are the configuration options for the S6BCK?
A: The S6BCK can be configured either via JTAG or SPI Flash.

Q: How can I obtain a copy of the Vita57 specification?
A: The specification is available for purchase at https://www.vita.com/online-store.html

Q: How many SelectIOs are available on the FMC connectors?
A: HPC (High Pin Count): 160 and LPC (Low Pin Count): 68

Q: How many RocketIOs are available on the FMC connectors?
A: HPC: 8 and LPC: 1

IP and Reference Design Related Questions

Q: What audio and video interface standards can I support with the broadcast FMC card?
A: You can support the major SMPTE video standards
- o *Four triple rate SDI (SD/HD/3G-SDI) bidirectional channels supporting SMPTE-259M, SMPTE-292M, and SMPTE-424M*

Q: Can I use the supplied SDI reference designs in my own system without further costs and licensing requirements?
A: Absolutely, but the designs are provided as-is and have only been fully tested on the Xilinx connectivity kits.

Q: Will the SDI designs in the Spartan-6 connectivity kit port to Virtex-6 FPGAs?
A: Not really – the transceivers are different in each family and the interface to the FPGA fabric is quite different. We have already developed a Virtex-6 Broadcast Connectivity Kit available now (www.xilinx.com/v6bck) which includes Virtex-6 reference designs for triple rate SDI. The Virtex-6 SDI reference designs are also available to download separately free of charge from the Xilinx website

Q: What audio reference designs or IP are provided?
A: Initial versions of the kit will only have triple rate SDI video interfaces. We will add audio reference designs such as AES embedding and de-embedding and Audio Asynchronous Sample Rate Conversion (ASRC) as options for the kit bearing in mind you will probably need the optional audio FMC card from TED. These designs will be available on the http://www.xilinx.com/s6bck product page or can be obtained from your local Xilinx distributor or sales office.

Q: You said the kit can use other FMCs for display interfaces. Does the kit include IP cores like V-by-One HS, DisplayPort, LVDS and HDMI?

*A: **DisplayPort:** DisplayPort LogiCORE IP is available from Xilinx; however, users must first fill out a system evaluation license agreement before being granted access to the core via the Xilinx web site.*
__V-by-One HS:__ Contact TED for access to the V-by-One HS IP core.
__HDMI:__ HDMI is a free reference design available from Xilinx to work with the ADI PHY.
__High Speed LVDS:__ LVDS is a free reference design based on XAPP1064 and can be downloaded from the Xilinx website free of charge.

Software Related Questions

Q: The board is shipped with a Device-Locked ISE Software. Can I use the software for other Xilinx devices?

A: No, the software provides access to the LX150T Device only

Q: What is ISE Design Suite Device-Locked?

A: This option has all features of the full version but provides access only to the LX240T device

Q: How do I register and install my software?

A: When you order the Spartan-6 Broadcast Connectivity kit, you will be sent an email with download instruction. If you log in with the Email address that was included in your purchase order, then you will already have an account created for you. If not, then you will need to register a new account.
This evaluation kit comes with "entitlement" to a seat of the ISE Design Suite software and all associated updates for a one-year period, or as specified in your purchase order.
Please visit the Xilinx software registration and entitlement site:
http://www.xilinx.com/getproduct

Q: What other software would be helpful? Why?

A: While ISE will support all the features of the Spartan-6 base board, there are some additional software tools that may be helpful. These are found in the ISE Logic, Embedded, DSP or System Editions.
For more information see: http://www.xilinx.com/tools/designtools.htm

- ChipScope Pro™ - an FPGA debug and verification tool. Using the ChipScope Core Generator or Core Inserter, you put ChipScope-specific logic into your design, called a ChipScope core. Then, you can connect to ChipScope cores later using the ChipScope Analyzer software to debug or validate your design.
- The AccelDSP™ Synthesis Tool - a product that allows you to transform a MATLAB® floating-point design into a hardware module that can be implemented in a Xilinx FPGA. The AccelDSP Synthesis Tool features an easy-to-use Graphical User Interface that controls an integrated environment with other design tools such as MATLAB, Xilinx ISE tools, and other industry-standard HDL simulators and logic synthesizers.
- System Generator - a DSP design tool from Xilinx that enables the use of The Mathworks™ model-based design environment Simulink for FPGA design. Designs are captured in the DSP friendly Simulink modeling environment using a Xilinx-specific block

set. All of the downstream FPGA implementation steps including synthesis and place-and-route are automatically performed to generate an FPGA programming file.

- PlanAhead – a design and analysis software product used to design large FPGA devices. The core technology includes a hierarchical floorplanning tool that can partition the physical design into smaller, more manageable pieces, thus reducing the time to understand, design, verify, and implement the FGPA.

Getting More Information

Q: Where do I get more information?
A: Please check back to the Spartan-6 Broadcast Connectivity Kit product page found at http://www.xilinx.com/s6bck

Q: What is the S6BCK marketing part number?
A: The ordering part number for the kit is TB-6S-BCK

Q: Who should I contact for technical support?
A: Please contact TED at s6bck-support@teldevice.co.jp

Q: Where can I purchase a kit?
A: Once the order entry is open, you can purchase your Spartan-6 Broadcast Connectivity kit online at: http://www.xilinx.com/s6bck or contact your local Xilinx Distributor or Representative at: http://www.xilinx.com/company/sales/ww_disti.htm

Q: When will I get my kit?
A: Lead-times will be provided through our distributors' webpages. For updated information, please contact your local distributor.