RF Scan Processor Board

PRODUCT DESCRIPTION

The RF Scan Processor board receives input two videos and two RF input. The board is used for processing the RF input video input signals and transferring it to the other boards via cPCI bus. The board supports data transfer rate of more than 50 Mbps over the cPCI bus.

The RF scan processor board has an ADC section with RF front-end signal conditioning circuit which receives the signals. It also has two FPGAs which does all the logical and arithmetic operations of the system.

The board is used in RF signal acquisition and processing for Electronic Warfare application.

KEY FEATURES

- Two RF input channels, with following features
  - Single ended, AC-coupled (50 ohms)
  - Signal bandwidth from 50 MHz to 1.5 GHz with signal power in range of -40dBm to 0dBm
  - Provision for two Band pass filter on each of the RF input channel
- Two video input channels, with following features
  - Single ended, DC-coupled (50 ohms)
  - Signal bandwidth from 0Hz to 100MHz with signal level power in range of 0 to 2.5V
- Add-on mezzanine card for RF signal conditioning circuit
- Data transfer on the cPCI bus > 50 MBytes per second
- Two optical serial links, each supporting 2.125 Gbps serial data rate

SPECIFICATIONS

FPGAs / Processor / ADC

- Virtex-5 SX240T FPGA with embedded DSP blocks
- Virtex-5 FX200T FPGAs with PowerPC440 embedded processor
- Dual channel 3 Gsps 8-bit ADC with following features
  - Sampling up to 3 Gsps on one channel and 1.5 Gsps on two channels
  - External sampling clock for multi board synchronization
  - Onboard synthesizer for sampling clock generation up to 1333 MHz
  - Supports ADC to FPGA digital 32-bit interface at speed 333 MHz with DDR2 mode

- Two single channel 13-bit ADC with following features
  - Up to 250 Msps on each channel
  - Provision for external sampling clock for multi board synchronization
  - Onboard oscillator 200 Mhz REF clock as a sampling clock generation
Interfaces
- Two optical serial links, each supporting 2.5 Gpbs serial data rate
- One 10/100/1000 Ethernet interface at the front and 10/100 MAC interface for Rear IO transition
- 32 channel RS422 transmitter and 32 channel RS422 receiver ports are available for RS422 communication via Rear IO transition

Software / IP
- Windows PCI driver to run on SBC
- Linux OS on Virtex-5 FX FPGA with command line interface
- ADC driver on Virtex-5 SX FPGA

Expansion Slots
- Add-on mezzanine card for RF signal conditioning circuit

Additional Information
- Hardware supports cPCI 32/64-bit @ 66 MHz or 33 MHz interface
- Two Xilinx platform flash for configuring the two FPGAs
- Two independent banks 18-bit true dual port SSRAM interface operating at 100 MHz, each having 36 Mbits size (total size is 8 Megabytes)
- Two independent banks 32-bit DDR2 interface operating at 100 MHz, each having 256 MBytes size (total size is 1 Giga bits)
- Supports standard PowerPC 7400 processor interface on Virtex-5 FX FPGA, supports communication to a standard COTS SBC board

MECHANICAL
- Air cooled board in 6U cPCI form factor

POWER CONSUMPTION
- The unit consumes < 50W
- Input voltage from cPCI backplane

ENVIRONMENTAL
- Qualification : MIL-STD-810F
- Temperature range : -40°C and +85°C (Storage)
  -20°C and +55°C (Operational)

PART NUMBER(S)

| CB10C0 | RF Scan Processor Board |