Wideband Digital Receiver/Digitizer Module
AMC-1151

AMC

Product Overview

The AMC-1151 is an ultra high-speed digitizer and processing solution that enables direct RF-to-Digital conversion between 100 MHz and 3 GHz.

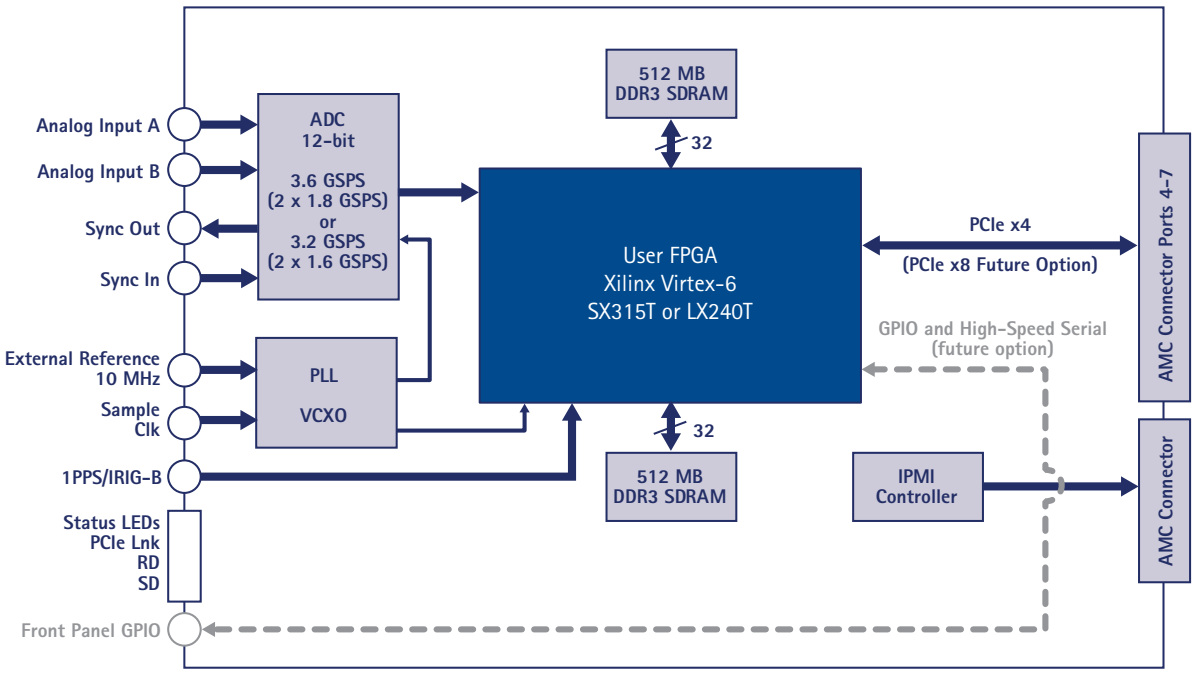
The Advanced Mezzanine Card (AMC) form factor enables its use in a variety of MicroTCA or AdvancedTCA environments. A rugged conduction-cooled variant is available.

Features

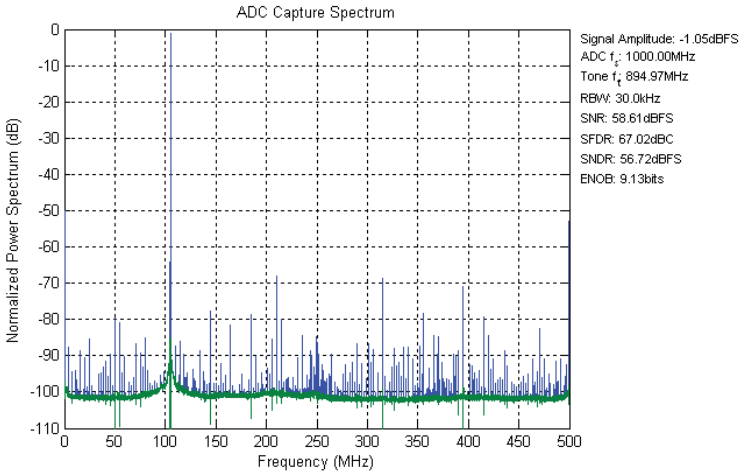
- One 3.6 GSPS 12-bit ADC channel (or two channels at 1.8 GSPS); or
  One 3.2 GSPS 12-bit ADC channel (or two channels at 1.6 GSPS)
- ADC analog input bandwidth up to 2.8 GHz enables bandpass sampling (Second Nyquist zone)
- Xilinx Virtex-6 SX315T or LX240T User FPGA
- 1 GB DDR3 SDRAM (2 banks of 512 MB, 1066 Mbps)
- AMC module supporting PCI Express Gen2 x4
- Supports multi-board synchronization
- Support for phase coherent sampling
- General purpose digital I/O including high speed serial
- Drivers and SDK, API, FPGA interfaces included
- Digital downconverter (DDC) IP available
- Air-cooled, rugged conduction-cooled available

Applications

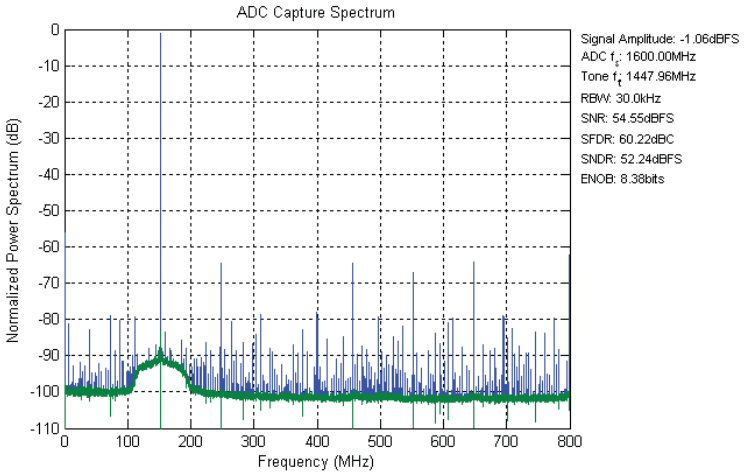
- SIGINT (COMINT/ELINT)
- RADAR
- Satellite Receiver
- Electronic Support Measures (ESM)
- Spectral Analysis
- Wideband Signal Recorder
- Software Defined Radio (SDR)
- High-Speed Test and Measurement
- Set-Top Box Development
- Wideband Sensing for Cognitive Radio
- Channel Measurement and Characterization



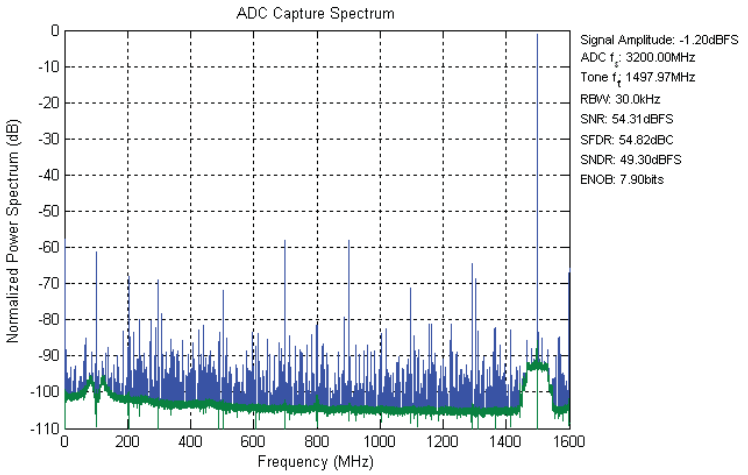
AMC-1151 Block Diagram



Sample spectral plot for 895 MHz input signal at 1.0 GSPS



Sample spectral plot for 1448 MHz input signal at 1.6 GSPS



Sample spectral plot for 1498 MHz input signal at 3.2 GSPS

Spectrum Signal Processing by Vecima tel +1/604.676.6700 or +1/800.663.8986 fax +1/604.421.1764 www.spectrumsignal.com

Specifications

[general]	Form Factor	AMC Single Width, Full Height
	User Programmable FPGA	Xilinx Virtex-6 SX315T-2 or LX240T-2 (LX130T, LX195T, LX365T, SX475T are available as options)
	Memory	1GB DDR3 SDRAM (2 banks of 512 MB each, 1066 Mbps)
	Sample Clock	Internal 1.6 GHz VCSO (Contact Spectrum for other frequencies) or external sample clock input
	Reference Clock	Internal 10 MHz clock reference (+/- 2.0 ppm) or external reference input
[analog I/O]	A/D Converter	Texas Instruments ADC12D1800 12-bit at 3.6 GSPS single channel or dual channel at 1.8 GSPS; or ADC12D1600 12-bit at 3.2 GSPS single channel or dual channel at 1.6 GSPS
	ADC Input	AC coupled, single-ended Full scale input: 0 dBm 50 ohms typical Analog full power bandwidth: 5 MHz to 2.8 GHz (AC coupled)
	ADC Characterization (typical)	

895 MHz Fin with 1.0 GSPS	1448 MHz Fin with 1.6 GSPS	1498 MHz Fin with 3.2 GSPS
ADC SFDR = 67.0 dBc	ADC SFDR = 60.2 dBc	ADC SFDR = 54.8 dBc
ADC SNR = 58.6 dBFS	ADC SNR = 54.5 dBFS	ADC SNR = 54.3 dBFS
ADC ENOB = 9.1 Bits	ADC ENOB = 8.4 Bits	ADC ENOB = 7.9 Bits

[external interfaces]	Analog Input	SSMC 50 ohms, 0 dBm typical
	External Reference Clock	SSMC 50 ohms, 0.75 - 1.6 Vpp 10 MHz clock reference
	External Sampling Clock	SSMC 50 ohms, -3 dBm typical
	GPS Timing Reference	SSMC 50 ohms, 1PPS/IRIG-B TTL/LVTTL
	Sync Input/Output	Twinax 100 ohms differential connector
	AMC Interface	PCIe Gen2 x4 link, providing 2 GB/s (full-duplex) bandwidth. For GPIO, see future option section of this datasheet
	JTAG Connection	JTAG connector for Virtex-6 FPGA, Xilinx Chipscope debugger compatible
[compatibility]	Supported Host OS	Red Hat Linux on processor card
[development software]	Application Libraries	*quic*Comm Software Development Kit
	Multi-board Sync	Firmware to support phase coherent sampling
	FPGA Code Development	Support for ISE Foundation tools from Xilinx or Synplify-Pro from Synopsys, Simulink/System Generator, ModelSim PE from Mentor Graphics
	HDL Coding Language	VHDL or Verilog
[electrical]	Supply Voltage (DC)	+12V payload power, and +3.3V management power
	Power estimate	23W (typical)
[environmental]	Operating Temperature	Air-cooled: range of 0 to 55 C, forced air @ 600 LFM Industrial conduction cooled available upon request
	Shock and Vibration	Conduction cooled version VITA-47 level CC3 tested in accordance with MIL-STD-810F
	Humidity	5-95% non-condensing. Contact Spectrum for higher ranges.
	RoHS	5/6 compliant (Pb solder exemption)
[ordering information]		Quickstart Kit: includes software and documentation to enable you to commence your development work immediately.
	800-00538	AMC-1151-CAC-V6LX240T-2 Quickstart Kit for uTCA/ATCA +Red Hat Linux
[future options**]	A/D Conversion	12-bit at 2.0 GSPS single channel or dual channel at 1.0 GPSPS 12-bit at 1.0 GSPS single channel or dual channel at 500 MSPS
	Memory	2 GB DDR3 SDRAM (2 x 1 GB banks)
	ADC input	DC coupled
	GPIO	Front panel connector
	PCIe	x8 lanes
	Operating System	VxWorks, INTEGRITY

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