VLF-HF Data Acquisition System

QUASAR Federal Systems

6-Channel 14-bit ADCs Sampled at 125 Msps

FEATURES

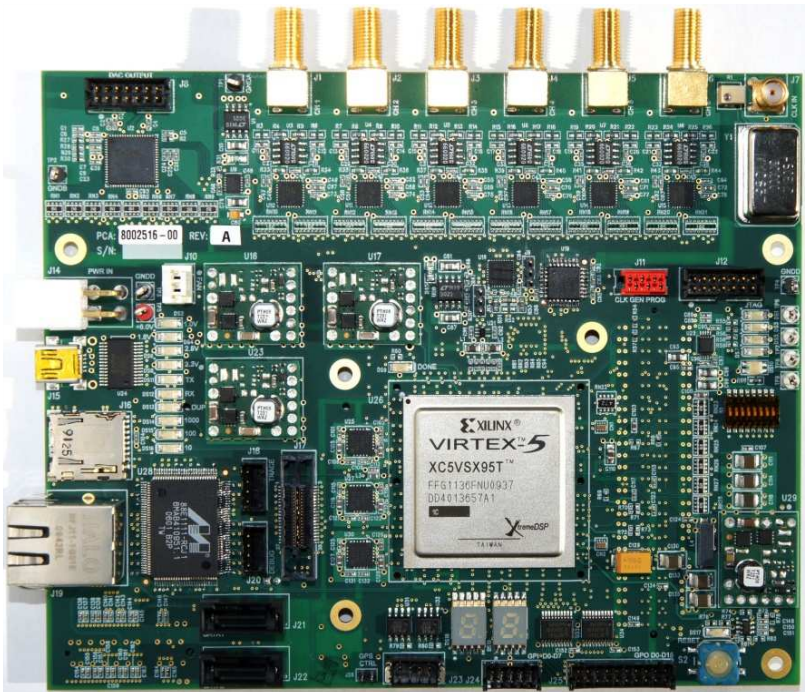
- 6 analog input channels
- 6 14-bit ADCs sampled at 125 Msps
- Input frequency range: 0-20 MHz
- Demodulated output bandwidth: 1.25 MHz
- DDC Demodulation Frequency: 0-20 MHz
- 2 analog RF output channels, 0-80 MHz
- 1000base-T Ethernet connection
- SATA SSD drive for data storage
- Embedded µC OS II for real-time processing
- SFDR: 85 dB
- SNR: 69 dB
- Channel isolation: >100 dB
- Dimensions: 5" X 6" X 1"
- Weight: 8 oz

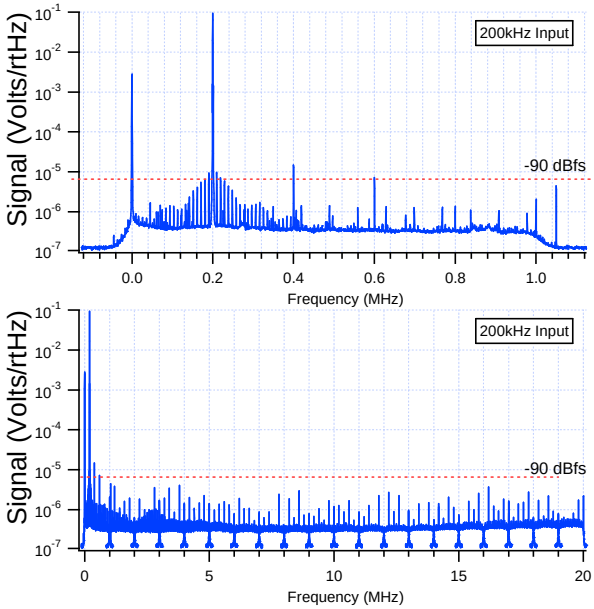
APPLICATIONS

- High frequency data log
- Vector sensor direction finding
- Wide-band EM surveillance

DESCRIPTION

The QFS VLF-HF data acquisition system is a single board designed to operate in the frequency range from 0 to 20 MHz. The 6 analog input channels are coherently sampled at 125 MHz and digitally down-converted to 1.25 MHz complex output. The digital down conversion is implemented on a Virtex 5 (SX95T) chip. The demodulation frequency is user controllable from 0 to 20 MHz. The complex data output can be recorded continuously on a SATA drive or streamed out via the 1000base-T Ethernet. A real-time operating system, µC OS II, is embedded in the Microblaze soft processor in the current implementation. The embedded operating system allows for on-board processing. The programmability of the FPGA chip and the embedded OS make it possible to adapt the system to a variety of applications without hardware modifications.





Shown here are the results of 4096-point FFT. The "skirt" around the 200 kHz main peak is from the signal generator used for the test. The upper spectrum is a zoom-in on the 0-1 MHz region of the lower spectrum.