

Oversampled Channelizer for Agilex™ FPGA

Example Design

DESCRIPTION

Intel® Agilex™ FPGA provides ultra-high fabric performance and better power efficiency, offers integrated ARM®-based processors, up to 116Gbps transceivers, PCI Express (PCIe) 5.0, Compute Express Link (CXL), and supports for Intel Optane™ Persistent Memory. These features make them ideal for a wide range of applications in many markets including data center, networking, broadcast, defense, and industrial.

To showcase Agilex FPGA capabilities, Intel developed an Oversampled Channelizer example design. This design features a polyphase filter bank developed using a DSP Builder for Intel FPGA design tool oriented for DSP developers. Data from On-chip Signal Generator is streamed into Channelizer block, that includes Commutator, Polyphase Filters, Circular Shifter and FFT block. Captured output of the Channelizer is uploaded to host and presented in viewers, while showing some key signal quality metrics.

Oversampled Channelizer design includes an On-chip Signal Generator which can provide programmable stimulus to Channelizer system, makes the design example run without external signal generator and ADC.

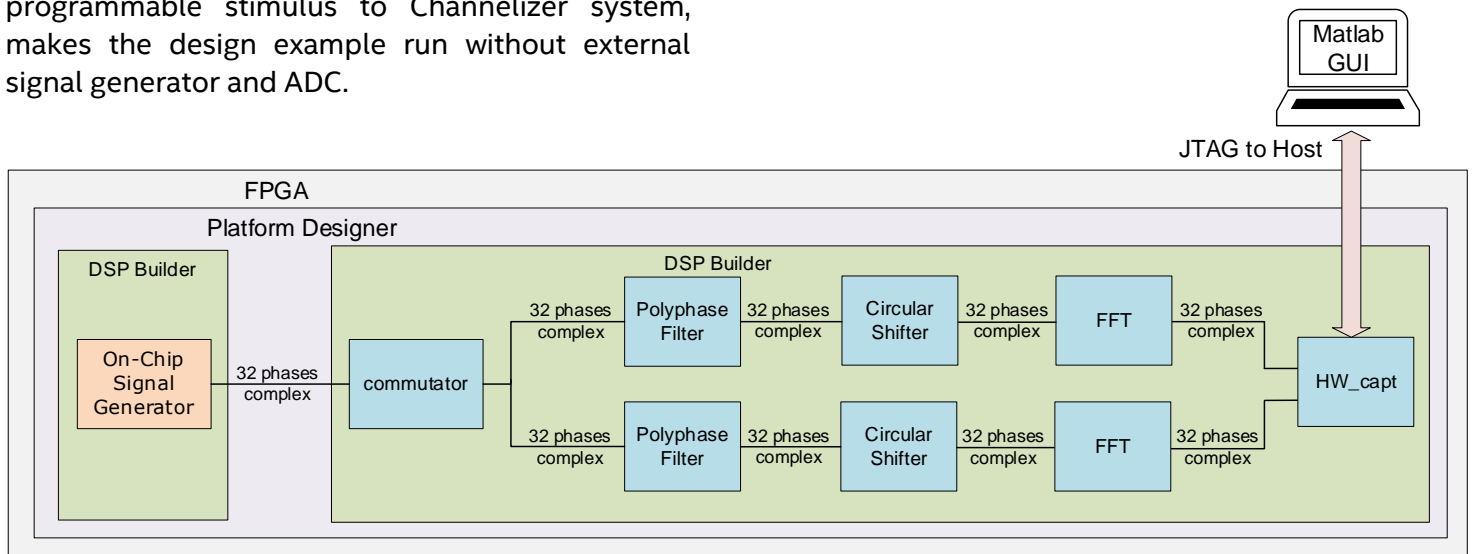
This design can be used as an out of the box demo to evaluate DSP Builder usage and Intel Agilex FPGA capabilities, show the ability of FPGA to perform sophisticated processing of data and serve as a potential starting point for customer applications.

FEATURES

- Sampling Rate Support: 24GSPS
- Support 256 Channels
- Polyphase signal processing infrastructure
- Dynamic Spectrum/Spectrogram View
- Time domain waveform View
- RF Performance measurements
- On-chip Signal Generator
- Intel Agilex FPGA Development Kit

APPLICATIONS

- Radar and Electronic Countermeasures
- Test and Measurement equipment
- Communication Systems



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