1.0	Design Example Datasheet

Description

A Pulse Doppler Radar detects the range and radial velocity of a target. It can also differentiate moving objects of different speeds near each other by observing the amount of phase shift among multiple reflections. The phase information is fed to an FFT which measures the amount of phase shifts over time and therefore velocity can be correlated.
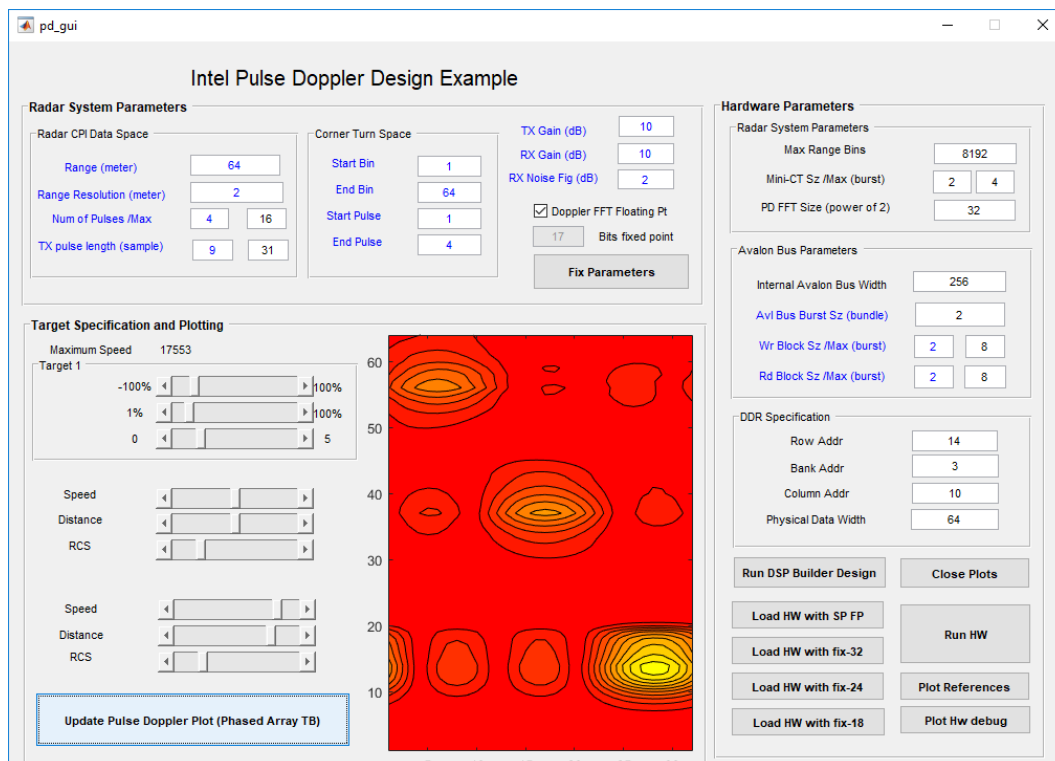
In this design example, the simulated radar receive signal is first generated by MATLAB's phased array toolbox as stimuli and is fed to the external DRAM of the development kit through Matlab API. The receive signal is then DMA and streamed to the processing core. The core includes a match filter for pulse compression, signal amplitude adjustment per range, corner turn via external DRAM, then FFT for pulse Doppler processing. The result is sent back to Matlab via the same Matlab API for analysis and display.

Features

- Process chain includes pulse compression, signal/ range scaling, corner turn with external memory, and FFT Doppler
- Selectable Floating-pt. or fixed-pt. processing
- Hardware demo with System-In-Loop on Stratix-V DSP development kit
- Run time configurable range, range resolution, number of pulses, pulse length, and corner turn size.

Applications

- Pulsed radar
- Multi-mode radar
- Automobile radar

March 2017 Intel

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