

Software-Defined Radio with Zynq Using Simulink

OEM: MathWorks • Code: MW-SOFTWARE-DEFINED-RADIO-WITH-ZYNQ-USIN

COURSE DESCRIPTION

This hands-on, one-day course focuses on modeling designs based on software-defined radio in MATLAB® and Simulink® and configuring and deploying on the ADI RF SOM. Modeling communications systems using Simulink Implementing Radio I/O with ADI RF SOM and Simulink Prototype deployment with real-time data via HW/SW co-design

AUDIENCE PROFILE

- IT professionals and technical staff seeking hands-on training in this course's subject area.

PREREQUISITES

- Programming Zynq SoCs with MATLAB and Simulink
- Knowledge of concepts of communications and hardware design

COURSE OBJECTIVES

By the end of this course, participants will be able to:

- Model and simulate RF signal chain and communications algorithms.
- Verify the operation of baseband transceiver algorithm using real data streamed from the AD9361 into MATLAB and Simulink.
- Generate HDL and C code targeting the programmable logic (PL) and processing system (PS) on the Zynq SoC to implement TX/RX.

COURSE OUTLINE

Module 1: Day 1 of 1

Model Communications System using Simulink

- Overview of software-defined radio concepts and workflows
- Model and understand AD9361 RF Agile Transceiver using Simulink
- Simulate a communications system that includes a transmitter, AD9361 Transceiver, channel and Receiver (RF test environment)

Implement Radio I/O with ADI RF SOM and Simulink

- Overview of System object and hardware platform
- Set up ADI RF SOM as RF front-end for over-the-air signal capture or transmission
- Perform baseband processing in MATLAB and Simulink on captured receive signal
- Configure AD9361 registers and filters via System object
- Verify algorithm performance for real data versus simulated data

Prototype Deployment with Real-Time Data via HW/SW Co-Design

- Overview of Zynq HW/SW co-design workflow
- Implement Transmitter and Receiver on PL/PS using HW/SW co-design workflow
- Configure software interface model
- Download generated code to the ARM processor and tune system parameters in real-time operation via Simulink
- Deploy a stand-alone system