

RFFP Simulated WiFi Signal Dataset

Simulated RF devices are “Analog Devices Inc” PLUTO models

- PLUTO hardware overview
- Simulator capabilities
- Ten device simulated dataset details

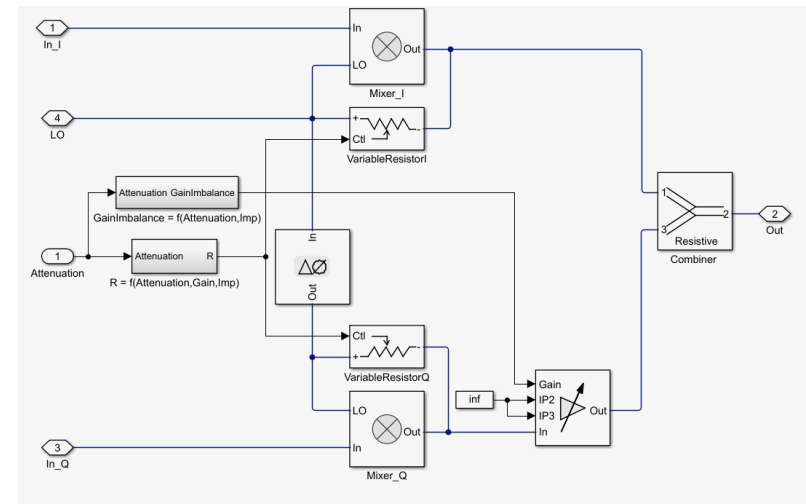
PLUTO hardware overview



- Based on Analog Devices (AD9363) --Highly Integrated RF Agile Transceiver and Xilinx® Zynq Z-7010 FPGA
- RF coverage from 325 MHz to 3.8 GHz
- Up to 20 MHz of instantaneous bandwidth
- Flexible rate, 12-bit ADC and DAC
- One transmitter and one receiver, half or full duplex

Pluto Matlab Simulator – Simulink Model Matches Pluto SDR

- MATLAB and Analog Devices worked together to create a Simulink model for a few of their transceivers chips
 - Model contains Transmitter and Receiver of chip AD9361 that matches the ADLAM-PLUTO devices
- Parameter Summary:
 - Variation in lookup table which control:
 - PA non linearity (OIP3)
 - phase and IQ imbalance
 - LO Leakage
 - LO noise drift
 - LO frequency drift



Ten device simulated dataset

- Wifi packets are generated with Matlab's wlan toolbox. Here we use 802.11a/g standard Non-HT waveforms.
- For each device the following settings are used:
 - Tx/Rx center freq: 2.432 GHz
 - Tx/Rx bandwidth/sample rate: 20 (MHz)/(Msamps/s)
 - Rx gain: 15
 - Tx gain: 0
 - Environment channel: AWGN
 - Number of packets: 2000
 - Packet payload size in bytes: 320
 - Modulation and coding scheme: 64-QAM $\frac{3}{4}$ rate (see [here](#))
 - Payload data is bitwise identical for all packets
 - All packets regardless of device have same MAC address:
 - MAC TX: FFFFFFFFFFFFFFFF
 - MAC RX: 0123456789AB

Ten device simulated dataset: simulation parameters

