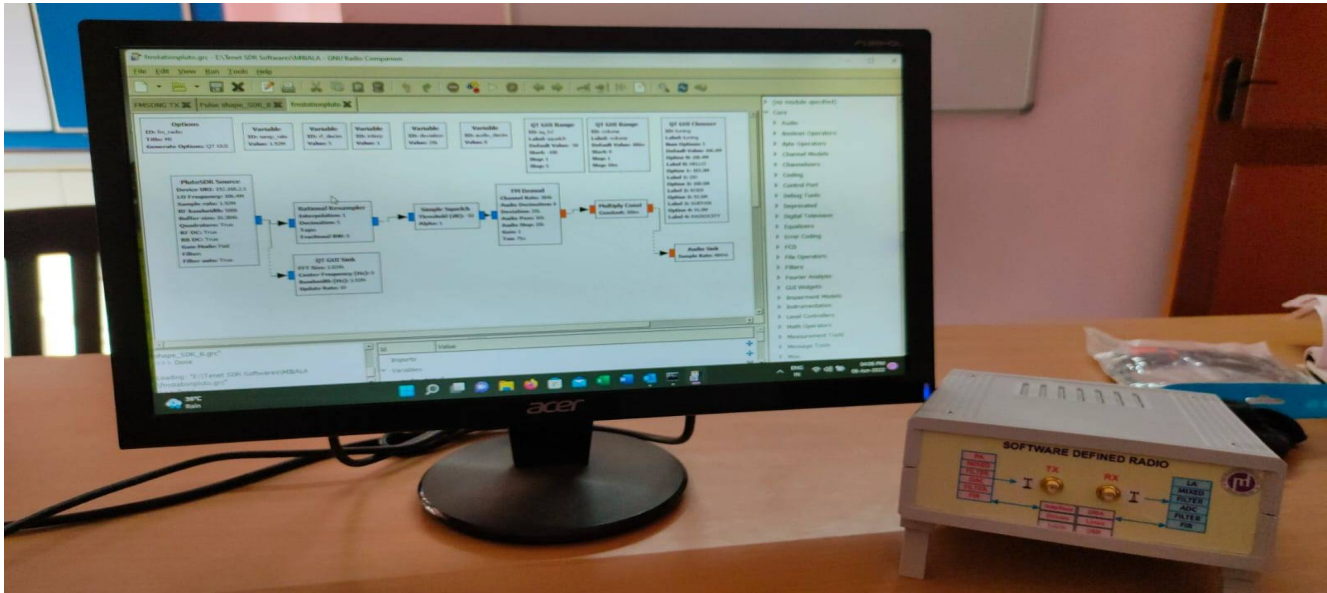


ADALM-SDR

SDR Active Learning Module



Product Overview

The easy to use ADALM-SDR active learning module (SDR) helps introduce electronics & electrical engineering students to the fundamentals of software-defined radio (SDR), radio frequency (RF), and wireless communications. Designed for students at all levels and from all backgrounds, the module can be used for both instructor-led and self-directed learning to help students develop a foundation in real-world RF and communications that they can build on as they pursue science, technology, or engineering degrees.

Connecting RF Theory with RF Practice

The ADALM-SDR works, as a portable lab that, when used with a host, can augment classroom learning. MATLAB® and Simulink® are two of the many software packages supported by ADALM-SDR, and it provides an intuitive graphical user interface (GUI) so students can learn faster, work smarter, and explore more

Exploring RF Theory & RF Practice (Made for Teachers, Students, and Self-Learners)

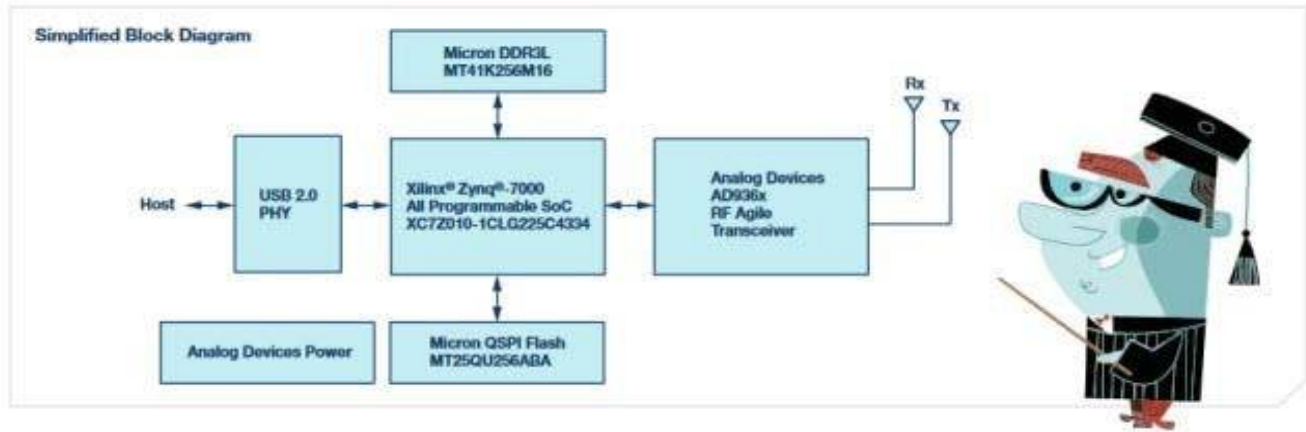
The ADALM-SDR features independent receive and transmit channels that can be operated in full duplex. The active learning module can generate or acquire RF analog signals from 70 MHz to 6000 MHz at up to 61.44 mega samples per second (MSPS). Small & Compact, this ADALM-SDR is completely self-contained and entirely USB powered with the default firmware. Because ADALM-SDR is enabled by libiio drivers, it supports OS X®, Windows®, and Linux®, which allows students to learn and explore on a variety of devices.

ADALM-SDR has dozens of online tutorials for SDR-based projects, ADALM-SDR boasts labs and teaching material covering topics such as ADS-B aircraft position, receiving NOAA and Meteor-M2 weather satellite imagery, GSM analysis, listening to TETRA signals, pager decoding, and many more

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Architecture of ADALM-SDR



Technical Specifications

<ul style="list-style-type: none"> • Stand Alone & works on Windows platform & provided with GNU Software • Portable self-contained RF learning module • Cost-effective experimentation platform • Based on Analog Devices AD9363 Highly Integrated RF Agile Transceiver and Xilinx® Zynq Z-7010 FPGA • RF coverage from 70MHz to 6 GHz • Up to 20MHz of instantaneous bandwidth • Flexible rate, 12-bit ADC and DAC • One transmitter and one receiver, half- or full-duplex • MATLAB® Simulink® support • GNU Radio sink and source blocks • Libii, a C, C++, C#, and Python API • USB 2.0 Interface • High quality plastic enclosure 	<ul style="list-style-type: none"> • Digital Specifications <ul style="list-style-type: none"> ○ 2.0 On-the-Go USB ○ Single ARM Cortex®-A9 @ 667MHz core ○ 28k FPGA logic cells ○ 80 DSP slices ○ 4Gb (512MB) DDR3L ○ 256Mb (32MB) QSPI flash ○ • Physical Specifications <ul style="list-style-type: none"> ○ 125g weight ○ +10°C to +40°C temperature range <p>Kit Includes :- Analog Devices ADLM SDR module Two antennas for TX & RX (824 MHz to -894 MHz/1710 MHz to ~2170 MHz) One USB cable</p>
<p>Power 4.5V to 5.5V DC input range (USB) Conversion Performance and Clocks</p> <ul style="list-style-type: none"> • 65.2kSPS to 61.44MSPS ADC and DAC sample rates • 12bits ADC and DAC resolutions • ±25ppm frequency accuracy 	<ul style="list-style-type: none"> • RF Performance <ul style="list-style-type: none"> ○ 70MHz to 6 GHz tuning range ○ 7dBm Tx power output ○ <3.5dB Rx noise figure ○ -34dB (2%) Rx and Tx modulation accuracy (EVM) ○ No RF shielding

ADALM SDR Host Interface

Mass storage (for easy firmware updates)

Serial (for interacting with the Linux kernel/user space on ADLM SDR)

Networking/RNDIS (for loading and controlling custom ARM® applications)

Libii (bulk USB for SDR data transfer and control)

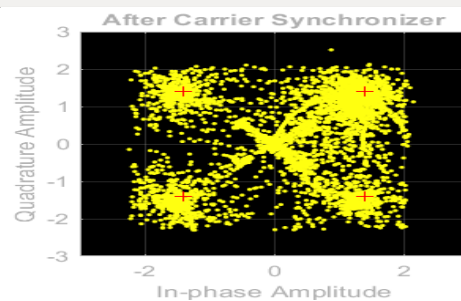
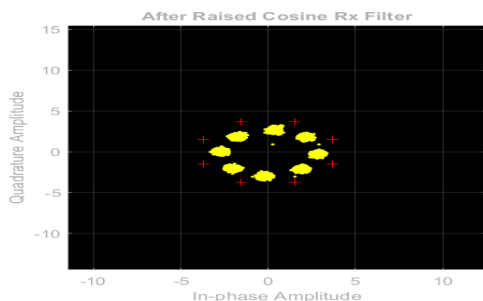
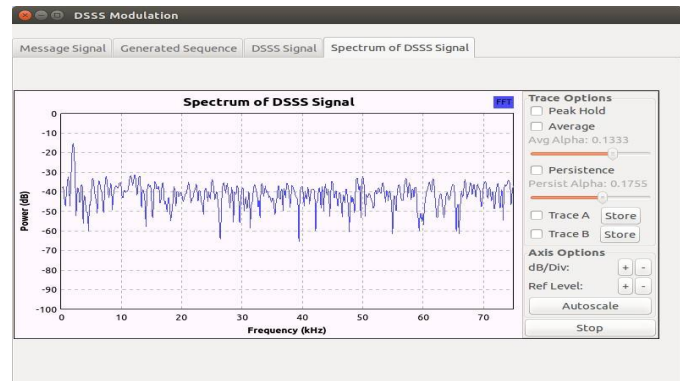
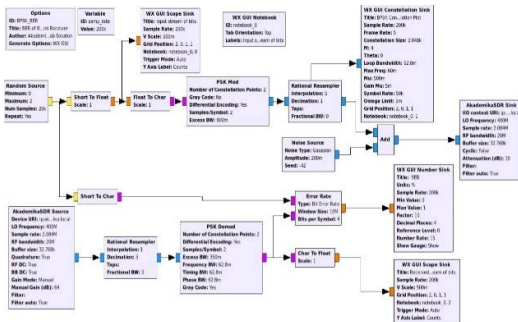
Device firmware upgrade (for backup firmware upgrades)

List of Experiments performed using ADALM SDR

ANALOG COMMUNICATION	DIGITAL COMMUNICATION
PAM Modulation /Demodulation	ASK Generation / Regeneration
AM Modulation/Demodulation	FSK /BPSK/QPSK /DPSK Generation / Regeneration
FM Modulation /Demodulation	OFDM Modulation /Demodulation
DSB SC Modulation/Demodulation	DSSS /GMSK Modulation/Demodulation
DSB SSB Modulation/Demodulation	DQAM Modulation / Demodulation
Spread Spectrum of FM Signals	BER Measurement of BPSK/QPSK/DQAM
TX Audio via FM & RX Audio via Mobile	Constellation & BER Measurement of 8PSK/16PSK

Implementation of Transceiver module system using ADALM-SDR Platform

Software Defined Radio (SDR) provides a comprehensive radio communication platform, based on which new technology can be used through software update. This leads to a large-scale reduction in expansion costs and enables the product to maintain technology development. The SDR platform can be set up with an open, standard, and programmable hardware platform, based on which the functions of the radio can be perceived by adding appropriate software modules. In this platform, the transformation and expansion of the radio functions are done in a software version without the need for a modification of the equipment. software radio station can easily communicate with the current or upcoming radio stations. In ADALM-SDR we analyse SDR evolution and various platforms and implement various modulation techniques with the aim of successfully transferring a message wirelessly over-the-air using ADALM- SDR platform by Analog Devices.



MARKETED BY

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