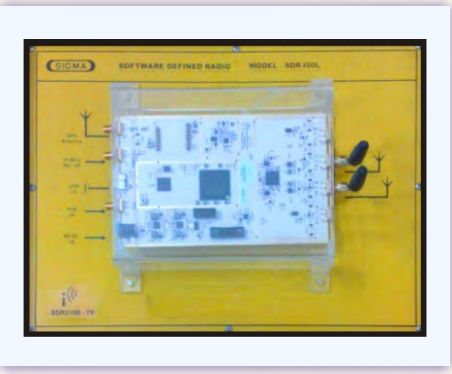
SOFTWARE DEFINED RADIO
(Elementary Model)
MODEL - SDR100L



Overview

This is a low cost USB 3.0 Software Defined Radio (SDR) designed to allow students and RF enthusiasts to explore wireless communication, and to provide professionals with a versatile COTS waveform development platform. It support Linux, OSX, and Windows. All host software, firmware, and HDL are released under open source licenses and schematics are freely available. The FPGA and USB peripheral controller are programmable with free vendor-supplied tools.

FEATURES

1. Use with GNU Radio and Matlab
2. Frequency range of 300 MHz to 3.8 Ghz
3. Connectivity for One Complete Tx/Rx chain
4. Up to 28 MS/s USB Streaming
5. USB 3.0 Interface to Host

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Dealer:-

SPECIFICATIONS

1. Frequency range of 300 MHz to 3.8 GHz
   - Extendable down to HF/VHF bands with the XB-200 Transverter Optional Module
2. Independent RX and TX signal paths
   - Half or full duplex Operation
   - Per-channel frequency, Sample rate, Bandwidth and Gain settings
   - Direct access to analog ADC/DAC Pins
3. USB 3.0 Support
   - Cypress FX3 SuperSpeed peripheral controller with integrated ARM926EJ-S
   - Fully bus powered over USB 3.0 or optionally powered via external 5V DC jack
   - Backwards compatible with USB 2.0 (with sample rate limitations)
4. Supported Software
   - GNU Radio via gr-osmosdr Blocks
   - MathWorks MATLAB® & Simulink® via Custom Interface Block
   - Pothos via SoapySDR
   - SDR Console
   - SDR# via sdrsharp-bladeRF
   - YateBTS
5. Up to 28 MHz of instantaneous bandwidth
   - Software-selectable filter options from 1.5 MHz to 28 MHz
6. Arbitrary sample rates up to 40 MSPS
   - 12-bit IQ samples
7. Factory Calibrated 1 PPM VCTCXO
   - Calibrated within 1 Hz of 38.4 MHZ reference
8. Altera Cyclone IV FPGA
   - 40 kLE for custom signal processing and hardware accelerators
9. Fully Customizable
   - Expansion port with 32 I/O pins
   - JTAG connectors
   - SMB connector for MIMO configuration
10. Applications
    - Custom Modem and Waveform Development
    - Wireless Video (e.g., ATSC, DVB-T, DVB-S)
    - GPS Reception and Simulation
    - Whitespace Exploration
    - GSM and LTE
    - ADSB reception and simulation
12. Power Supply - USB Bus Powered
13. Accessories :-
    1. Trainer,
    2. Antennas - 2 Nos. 2.4 GHz
    3. Loopback Cable
    4. Bootable USB GNU Radio Drive
    5. Practical Manual
    6. Application Sw CD
    7. SDR Presentation PPT Slides
    8. SDR Books - 50 Nos in PDF format
    9. Communications Block Book by Prof. D R Luhar

EXPERIMENTS

MODEL - SDR-N200

1. To understand Basic theory of Software Defined Radio
2. To understand Block Diagram of Software Defined Radio
3. To install Operating System in Computers Linux
4. To understand Hardware of Software Defined Radio
5. To understand and Install Software for SDR
6. To install UHD Driver Software
7. To install Programming Languages C++ and Python
8. To understand and Install Applications Programs
   GNU Radio and Matlab Simulink
9. To How to Start
10. To generate Sine wave signal
11. To generate Noise signal
12. To add Signal and Noise
13. To observe SNR clipping
14. To generate Variable
15. To generate Dial Tone
16. To generate Mono Tone
17. To generate Multi Tone
18. To generate AM Modulation signal
19. To generate AM DSB Modulation signal
20. To generate AM SSB Modulation signal
21. To generate Stereo FM Receiver
22. To receive FM signal
23. To receive FM signal
24. To receive Wide band FM signal
25. To generate synchronized PAM signal
26. To generate PAM timed signal
27. To generate Gaussian FSK signal
28. To generate Gaussian FSK PLL signal
29. To generate Single Channel BPSK signal
30. To generate Dual Channel BPSK signal
31. To generate DPSK Signal
32. To generate MPSK
33. To generate Single Channel QPSK Signal
34. To generate Double Channel QPSK Signal
35. To generate GMSK Signal
36. To generate QAM signal
37. To generate Measure Bit Error Rate
38. To represent Digital Bits
39. To generate PLL PSK signal
40. To generate Multiplath MPSK signal
41. To receive Radar Beacon signal
42. To receive AZmap signal
43. To implement FFT Filter
44. To implement Synth Filter
45. To make XMLRPC Server
46. To make XM:RPC Client
47. To generate CVSD Sweep signal
48. To display UHD FFT signal
49. To decode 802,11a wireless signal
50. To generate RA5 signal

51. To received Mode-S Signals
52. To transmit DPSK signal using UHD
53. To receive DPSK signal using UHD
54. To receive IQ signals
55. To observer Transmitted Carrier signal on CRO
56. To generate OFDM signal
57. To observer characteristics of OFDM signals
58. To transmit OFDM signal using USRP
59. To receive OFDM signa l using USRP
60. To understand HDSDR
61. To observer other grc and py files in GNU Radio