



## SDR DESIGN BENCH- SDB05

A HIGHLY VERSATILE SOFTWARE DEFINED RADIO BASED PLATFORM FOR EFFICIENT DESIGN AND FAST PROTOTYPING OF MODERN WIRELESS STANDARDS



### DESIGN, SIMULATION & PROTOTYPING

Polarizone product line in broadband wireless design offer modular solutions which provide baseband and RF functionalities. These cost effective platforms offer an end-to-end platform involving baseband processing, digital and analog up conversion, antennas, down conversion and receiver signal processing capability. These innovative solutions save enormous time and money for teaching and research in Broadband wireless communication systems.

### OVERVIEW

SDR design bench (SDB05) is a flexible and reconfigurable platform for teaching and research in modern wireless communication systems. The design bench can be used as a versatile demonstration system for teaching wireless communication. Additionally, the design bench offers a cost effective platform for research in modern wireless systems such as Software Defined Radio, WiFi, WiMAX, CDMA and other emerging techniques.

### HIGHLIGHTS

SDB05 offers an all encompassing platform consisting of a transmitting unit, receiving unit and the necessary antennas. The system comes with all hardware and software and other accessories such as power supplies and oscillators. It has a software based logic analyzer for easy analysis of the baseband signals. The baseband and RF sections are interfaced seamlessly to offer programmability in both the sections.

- **Real time data transmission**
- **Real time voice and video transmission**
- **Baseband + ADC/DAC + RF Transceiver + Antennas**



## KEY FEATURES & BENEFITS

- Two separate units for Tx and Rx
- Includes Baseband + ADC/DAC + RF Transceiver + Antennas
- Software Defined radio methodology
- Programmability at baseband and RF
- High performance ADC/DAC
- Selectable channels between 2400 MHz-2500MHz
- Selectable RF power between 0dBm-17dBm
- HDL source code for various modulation and demodulation techniques
- Tutorials, demos, help files and documentation for quick start
- Development & integration services

## APPLICATIONS

- Real time generation of ASK, FSK, BPSK, QPSK, QAM signals
- Real time data/audio/video transmission
- Real time generation and reception of CDMA
- Real time implementation and encryption and FEC encoding
- DPLL and Digital costas loop analysis
- Demonstration of various subsystems such as DDS, DUS, DDC of modern wireless systems
- RF channel measurements and antenna pattern analysis

## TECHNICAL SPECIFICATION

### TRANSMITTER:

- High performance FPGA baseband
- 165 Msps, dual channel 12 bit DACs
- 2.4 GHz – 2.5 GHz RF output
- Variable RF channel and power selection
- DDS for Frequency & Phase selection
- Source and Error correction coding

### RECEIVER :

- Zero-IF down conversion
- 53 Msps, dual 12 bit ADC
- DUC and receiver filters banks
- DPLL based synchronization
- FPGA based baseband processing

### OTHER ACCESSORIES :

- Single patch microstrip antenna
- Dual patch dual polarization microstrip antenna
- Dipole antenna
- Coplanar Wave guide transmission lines
- Microstrip transmission lines
- Built in power supplies
- Built in RF synthesizers
- Built in software logic analyzer



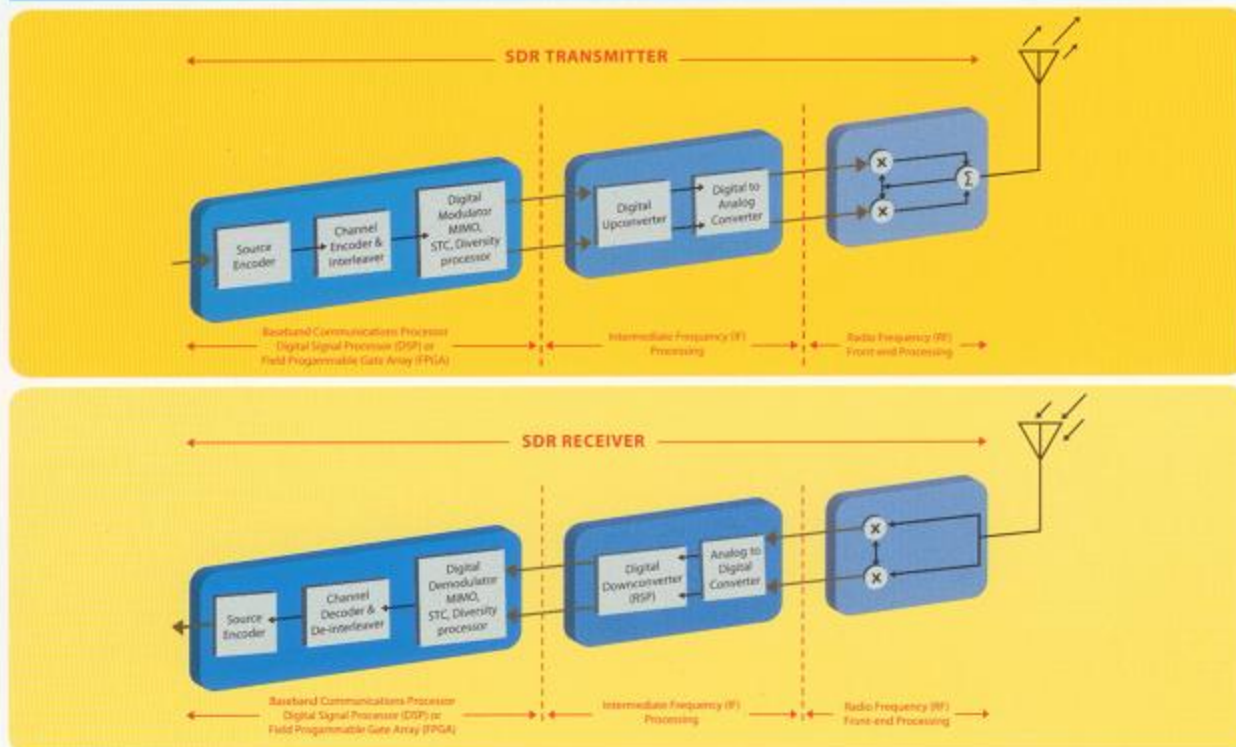
## TYPICAL DEMONSTRATION EXPERIMENTS

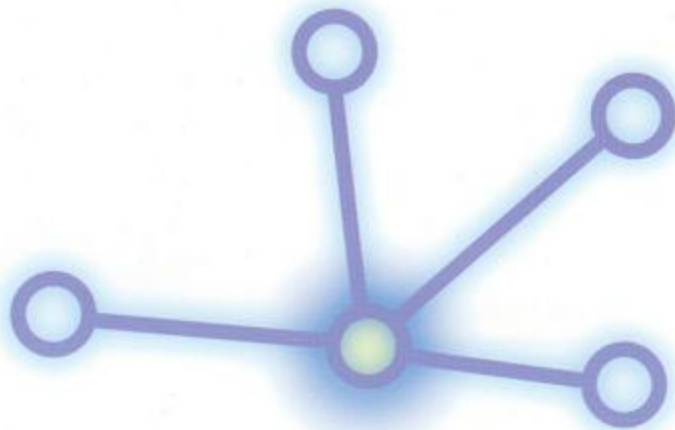
1. BPSK signal generation and reception
2. QPSK signal generation and reception
3. QAM signal generation
4. FSK / ASK modulation
5. Direct digital synthesis ( DDS )
6. Direct up conversion ( DUC )
7. Direct down conversion ( DDC )
8. RF up-conversion / down conversion
9. Radiation pattern of an antenna
10. Cross polarization analysis
11. Co-polarization analysis
12. Impedance matching
13. Frequency response of RF systems
14. Spectral analysis at baseband
15. Channel measurements at ISM
16. Receiver synchronization
17. Link Budget measurements

## TYPICAL RESEARCH PROJECTS

- Broad band wireless communication system using QPSK/QAM modulation
- A multi-user wireless network using CDMA
- Study of wireless propagation at ISM band (2.4 – 2.5 GHz)
- MAC/ PHY of a 802.11b system
- Secure data/audio/video communicating system

## BLOCK DIAGRAM





## PRODUCT RANGE

1. MIMO Design Bench
2. WiMAX Design Bench
3. MIMO-OFDM Transceiver Kit
4. RF Up/Down Conversion Kit

## ABOUT US

Polarizone Technologies is a wireless technology company specializing in market driven R & D in wireless communication to develop novel products and services across the ICT value chain. Polarizone is a one-stop place for electronic design, prototyping, manufacturing & developing a range of value added products & services.

## CONTACT US FOR INFORMATION

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