Qpsk Modulator And Demodulator Using Fpga For Sdr

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QPSK Quadrature Phase Shift Keying (Basics, Modulator, Waveforms, Demodulator \u0026 Applications) Quadrature Phase Shift Keying (QPSK) Modulation Technique Study of PSK modulator and demodulator

QPSK- QPSK Generation and Detection - QPSK Block Diagram (Quadrature Phase Shift Keying)*Quadrature Phase Shift Keying (QPSK) / BPSK and QPSK / QPSK Waveform (Digita Modulation Techniques) QPSK Modulation/Demodulation Trainer - Tesca 40611*

QPSK Modulation \u0026 Demodulation*Digital modulation: ASK, FSK, and PSK Quadrature Phase Shift Keying (QPSK) Demodulation Technique* Phase Shift Keying (PSK) Modulation and Demodulation | BPSK and QPSK L 10 | QPSK | Quadrature Phase Shift Key | Digital Communication | Vaishali Kikan *Digital Modulation Techniques| ASK|FSK|PSK|DPSK |QPSK Concepts, Spectrum and Features in Exam Point Modulation \u0026 QAM Basics OFDM - Orthogonal Frequency Division Multiplexing #170: Basics of IQ Signals and IQ modulation \u0026 demodulation - A tutorial*

Amplitude Modulation.avi QPSK transceiver with SDR ADALM-PLUTO and Matlab/Simulink ~~QAM, QPSK Explanation, (PART 2 leading to 16QAM and more ....)~~ ~~Symbol amplitudes: 16 QAM (0003)~~

ASK FSK PSK Modulation / Digital Modulation Techniques / Amplitude, Frequency and Phase Shift Keying**33 Digital Communication Receivers** ~~QPSK Modulation in Matlab AWGN Channel - Part 1 (2016) Matlab Tutorial~~ *Binary Phase Shift Keying (BPSK Modulation) Phase Shift Keying (PSK Modulation) Digital Modulation* Inside Wireless: QAM modulation

Matlab code to generate QPSK waveform for the given binary sequence by Dr. VBK~~Matlab code for BPSK waveform generation and demodulation by Dr. VBK~~ ~~BPSK Binary Phase Shift Keying, BPSK Transmitter, Constellation Diagram of BPSK, BPSK Signals~~ QPSK modulator : Block diagram of modulator *Digital Modulation BPSK/QPSK Part-3-Hindi/Urdu | Digital Communication | wireless communication*

BPSK Modulator Demodulator using Multisim**Qpsk Modulator And Demodulator Using**

QPSK modulation & demodulation (Matlab and Python) Quadrature Phase Shift Keying (QPSK) is a form of phase modulation technique, in which two information bits (combined as one symbol) are modulated at once, selecting one of the four possible carrier phase shift states. Therefore, the four possible initial signal phases are and radians.

QPSK modulation & demodulation (Matlab and Python ...

In QPSK, modulation is symbol based,where one symbol contains 2 bits. The following equation outlines QPSK modulation technique. s i (t)=2E s T−−−−√cos(2πf c t+(2n−1)π4),n=1,2,3,4 When n=1, the phase shift is 45 degrees. This is called pi/4 QPSK.The constellation diagram of QPSK will show the constellation points lying on both x and y axes.This means that the QPSK

QPSK MODULATION AND DEMODULATION - idc-online.com

The FPGA implementation of π/4 QPSK modulator and demodulator is presented complete modulator and demodulator units will be modeled using VHDL and functionality will be verified using modelsim simulation tools. The code will be synthesized onto Xilinx FPGA kit.

QPSK Modulator and Demodulator Using FPGA for SDR

An SDR has been constructed, using the Simulink tool, and implemented on the SPARTEN-3E Field Programmable Gate Array (FPGA) development kit. The modulation scheme used in the system is Quadrature Phase-Shift Keying (QPSK). In the first step to realize the whole modulation and demodulation schemes using MATLAB Simulink.

[PDF] QPSK Modulator and Demodulator Using FPGA for SDR ...

Construction. H = comm.QPSKDemodulator creates a demodulator System object, H.This object demodulates the input signal using the quadrature phase shift keying (QPSK) method. H = comm.QPSKDemodulator(Name,Value) creates a QPSK demodulator object, H, with each specified property set to the specified value.You can specify additional name-value pair arguments in any order as (Name1,Value1 ...

Demodulate using QPSK method - MATLAB

The design and measured results of a broad-band direct quadrature phase shift keying (QPSK) modulator and demodulator are described in this paper. The circuits are fabricated using 1-m GaAs HBT technology. To s uppress the local oscillator (LO) leak-age, the double-balanced mixer is selected as the core unit in the modulator/demodulator.

Broad-band direct QPSK modulator/demodulator for wireless ...

To perform QPSK modulation and demodulation, you can use the " pskmod " and " pskdemod " functions by setting the order of modulation to 4. The " pskmod " function is elaborated upon here , with the example of QPSK modulation provided, and the " pskdemod " function is elaborated upon here , with an example of the entire process of modulation, channel modelling and demodulation.

QPSK modulator and demodulator - MATLAB Answers - MATLAB ...

The QPSK Demodulator Baseband block demodulates a signal that was modulated using the quadrature phase shift keying method. The input is a baseband representation of the modulated signal. The input must be a complex signal. This block accepts a scalar or column vector input signal.

QPSK Demodulator Baseband - MathWorks UK

communication systems and models for quadrature modulators, and demodulators serve as building blocks for most other types of data modulators and demodulators. Therefore, this chapter begins with a discussion ofquadrature phase shift keying (QPSK) and uses this discussion as a vehicle for development of generic models

MODULATION AND DEMODULATION

QPSK Modulator Demodulator using Bladerf on GNURadio. Ask Question Asked 1 year, 6 months ago. Active 1 year, 5 months ago. Viewed 648 times 0. 1. I am working on a project to transmit and receive the binary data by using QPSK modulation and demodulation technique on GNURadio via SDR (BladeRFx40). Here is the ...

QPSK Modulator Demodulator using Bladerf on GNURadio ...

We'll use QPSK as an example of how quadrature modulation works, and in the process we'll see how amplitude modulation of I/Q signals can produce phase shifts beyond 90°. This is a basic block diagram for a QPSK modulator. First, the digital data stream is processed so that two consecutive bits become two parallel bits.

Understanding I/Q Signals and Quadrature Modulation ...

QPSK Modulation and Demodulation in Matlab AWGN Channel. We will first load our audio signal. Then we will use quantization, QPSK modulation, QPSK demodulati...

QPSK Modulation and Demodulation in Matlab AWGN Channel ...

MATLAB Code for QPSK Modulation and Demodulation. version 1.0.0.0 (2.99 KB) by Md. Salim Raza. MATLAB Code for QPSK Modulation and Demodulation has been Developed According to Conventional Theory. 4.4.

MATLAB Code for QPSK Modulation and Demodulation - File ...

The OQPSK Demodulator Baseband block applies pulse shape filtering to the input waveform and demodulates it using the offset quadrature phase shift keying (OQPSK) method. For more information, see Pulse Shaping Filter. The input is a baseband representation of the modulated signal.

Demodulation using OQPSK method - Simulink

In DPSK modulation, serial binary data pass through X-NOR gate and the output is fed back via 1 bit delay. The resulting bit stream is applied to the balanced modulator to produce DPSK signal. DPSK demodulation using DPSK demodulator. Figure-2 depicts the process of DPSK demodulation using DPSK demodulator in the form of a block diagram.

DPSK modulation,DPSK demodulation,Differential Phase Shift ...

OQPSK Modulator-Demodulator Block Pair Use The OQPSK Modulator Baseband and OQPSK Demodulator Baseband blocks connected with no channel or impairments distorting the signal between them. They are configured for frame-based processing with bit signal inputs. Single-Rate Processing with OQPSK Modulator Block

Modulation using OQPSK method - Simulink

Phase-shift keying (PSK) is a digital modulation process which conveys data by changing (modulating) the phase of a constant frequency reference signal (the carrier wave).The modulation is accomplished by varying the sine and cosine inputs at a precise time. It is widely used for wireless LANs, RFID and Bluetooth communication.. Any digital modulation scheme uses a finite number of distinct ...

Phase-shift keying - Wikipedia

Description. The OQPSK Demodulator Baseband block applies pulse shape filtering to the input waveform and demodulates it using the offset quadrature phase shift keying (OQPSK) method. For more information, see Pulse Shaping Filter. The input is a baseband representation of the modulated signal.

Four phase direct demodulation systems and high bit rate telemetry require four phase modulator. This work describes a four phase modulator development and a demodulator design at X-band frequency in MMIC technology. The modulator and demodulator MMIC design uses lumped elements networks and a 0.5 microns gate length process. Demodulator simulation results are presented. The modulator has been realized, it exhibits low consumption due to the use of cold FETs. Small phase switching times, less than 300 picoseconds, have been measured which confirm high bit rate modulator capability. Carrier rejection of about 28 dB and high clock rejection level are obtained in a QPSK modulation spectrum.

This book uses a practical approach in the application of theoretical concepts to digital communications in the design of software defined radio modems. This book discusses the design, implementation and performance verification of waveforms and algorithms appropriate for digital data modulation and demodulation in modern communication systems. Using a building-block approach, the author provides an introductory to the advanced understanding of acquisition and data detection using source and executable simulation code to validate the communication system performance with respect to theory and design specifications. The author focuses on theoretical analysis, algorithm design, firmware and software designs and subsystem and system testing. This book treats system designs with a variety of channel characteristics from very low to optical frequencies. This book offers system analysis and subsystem implementation options for acquisition and data detection appropriate to the channel conditions and system specifications, and provides test methods for demonstrating system performance. This book also: Outlines fundamental system requirements and related analysis that must be established prior to a detailed subsystem design Includes many examples that highlight various analytical solutions and case studies that characterize various system performance measures Discusses various aspects of atmospheric propagation using the spherical 4/3 effective earth radius model Examines Ionospheric propagation and uses the Rayleigh fading channel to evaluate link performance using several robust waveform modulations Contains end-of-chapter problems, allowing the reader to further engage with the text Digital Communications with Emphasis on Data Modems is a great resource for communication-system and digital signal processing engineers and students looking for in-depth theory as well as practical implementations.

Satellite Communications: Mobile and Fixed Services is based on the premise that designers of future satellite systems must take account of the strong competition that satellites face from optical fibers. In future years, satellites will continue to be commercially viable media for telecommunications only if systems designers take account of the unique features that satellites have to offer. Accordingly, Satellite Communications places more emphasis on satellite mobile services and broadcasting, and less emphasis on fixed, point-to-point, high-capacity services than traditional textbooks in the field. Also, an emphasis is given in the book to design issues. Numerous illustative system design examples and numerical problems are provided. The particular attention given to methods of design of satellite mobile communications systems should make it an indispensable resource for workers in this field. The book also contains some recent results of propagation modelling and system design studies which should be of particular value to researchers and designers of satellite systems for mobile communications services. Satellite Communications is suitable for use as a textbook for advanced courses on satellite communications, and is a valuable reference for all those working in the field.

OFDM has become an important issue within the optical field during the last two decades. For this reason, for a better understanding of the impact from transmitter and receiver, the full system (modulator and demodulator) has been implemented using Matlab. The different components of the transmitter and receiver have been coded in a modular way. Thus, the different parts of the transmitter are the sequence generator, the amplitude and phase modulator (BPSK, QPSK, 16QAM and 64QAM), the OFDM modulator and the optical up-converter. While the parts of the receiver are the optical down-converter, the OFDM demodulator, the amplitude and phase demodulator (BPSK, QPSK, 16QAM and 64QAM) and the estimator of sequences. Besides, there are two modules to analyse the system, one to measure the EVM and another one to calculate the BER using the Monte Carlo method. Finally, the channel can be noiseless of with AWGN. The analysed factors that influence the modulation and demodulation are the constellation calculation (mainly 16QAM and 64QAM), the ADC of the receiver (number of quantization bits) and the optical up and down conversion (the rate between the input electrical signal to the optical up-converter and Vpi). These parameters introduce an error that affects the performance of the full modulation and demodulation. The simulations has been done with a bit sequence with a length around 262.000 bits. The results were analysed from multiple simulations, studying individually the different parameters. To summarize, the ADC is the parameter that affects most the system introducing errors. For a BPSK and QPSK modulation, 4 quantization bits are enough to get a very good result. For a 16QAM, 5 quantization bits are required. Finally, for a 64QAM, 6 quantization bits are necessary. In addition, the optical conversion practically doesn?t affect to the BPSK and QPSK modulation, but the introduced error is more relevant for the 16QAM and very important for the 64QAM. The constellation calculation also affect the system (in a slighter way) due to the limited number of bits, with a longer sequence this error can be mitigated.

This book offers an easily accessible treatment of the theory and practice of digital data communications, explaining how to design, implement, and test software-defined radio modems. System analysts and designers will benefit from detailed system performance simulations that ensure compliance with end-user specified requirements under the expected channel conditions. The book features case studies and examples for end-to-end performance evaluations, simulation codes for waveform acquisition and data demodulation, design and analysis techniques, applications for microwave and millimeter wave bands, and much more.

This superb text provides a systematic way to support the system architect in this job. Therefore, an iterative system-level design approach is defined where iterations are based on fast and accurate estimations or predictions of area, performance and energy consumption. This method is illustrated with a concrete real life example of multi-carrier communication. This book is the result of a Ph.D. thesis, which is part of the UbiCom project at Delft University of Technology.

A Practical Guide to Analog Behavioral Modeling for IC System Design presents a methodology for abstracting an IC system so that the designer can gain a macroscopic view of how sub-systems interact, as well as verify system functionality in various applications before committing to a design. This will prevent problems that may be caused late in the design-cycle by incompatibilities between the individual blocks that comprise the overall system. This book will focus on the techniques of modelling IC systems through analog behavioral modeling and simulation. It will investigate a practical approach by which designers can put together these systems to analyze topological and architectural issues to optimize IC system performance. Highlights: Discussions on modeling and simulation from SPICE to behavioral simulators Comparison of various hardware description languages and a discussion on the effects of language standardization Explanation on how to reduce time-to-market by decreasing design-cycle time through modeling and simulation Contains more than 25 building block examples that can be used to construct mixed-signal IC system models Analysis of 4 different IC systems using various levels of model detail This book is intended for the practicing engineer who would like to gain practical knowledge in applications of analog behavioral modelling for IC system design.

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

The purpose of this book is first to study MATLAB programming concepts, then the basic concepts of modeling and simulation analysis, particularly focus on digital communication simulation. The book will cover the topics practically to describe network routing simulation using MATLAB tool. It will cover the dimensions' like Wireless network and WSN simulation using MATLAB, then depict the modeling and simulation of vehicles power network in detail along with considering different case studies. Key features of the book include: Discusses different basics and advanced methodology with their fundamental concepts of exploration and exploitation in NETWORK SIMULATION. Elaborates practice questions and simulations in MATLAB Student-friendly and Concise Useful for UG and PG level research scholar Aimed at Practical approach for network simulation with more programs with step by step comments. Based on the Latest technologies, coverage of wireless simulation and WSN concepts and implementations

This paperback is a color edition. Link to the black & white edition: https: //www.amazon.com/gp/product/152149388X Digital Modulations using Matlab is a learner-friendly, practical and example driven book, that gives you a solid background in building simulation models for digital modulation systems in Matlab. This book, an essential guide for understanding the implementation aspects of a digital modulation system, shows how to simulate and model a digital modulation system from scratch. The implemented simulation models shown in this book, mostly will not use any of the inbuilt communication toolbox functions and hence provide an opportunity for an engineer to understand the basic implementation aspects of modeling various building blocks of a digital modulation system. It presents the following key topics with required theoretical background along with the implementation details in the form of Matlab scripts. * Basics of signal processing essential for implementing digital modulation techniques - generation of test signals, interpreting FFT results, power and energy of a signal, methods to compute convolution, analytic signal and applications. * Waveform and complex equivalent baseband simulation models. * Digital modulation techniques covered: BPSK and its variants, QPSK and its variants, M-ary PSK, M-ary QAM, M-ary PAM, CPM, MSK, GMSK, M-ary FSK. * Monte Carlo simulation for ascertaining performance of digital modulation techniques in AWGN and fading channels - Eb/N0 Vs BER curves. * Design and implementation of linear equalizers - zero forcing and MMSE equalizers, using them in a communication link. * Simulation and performance of modulation systems with receiver impairments.