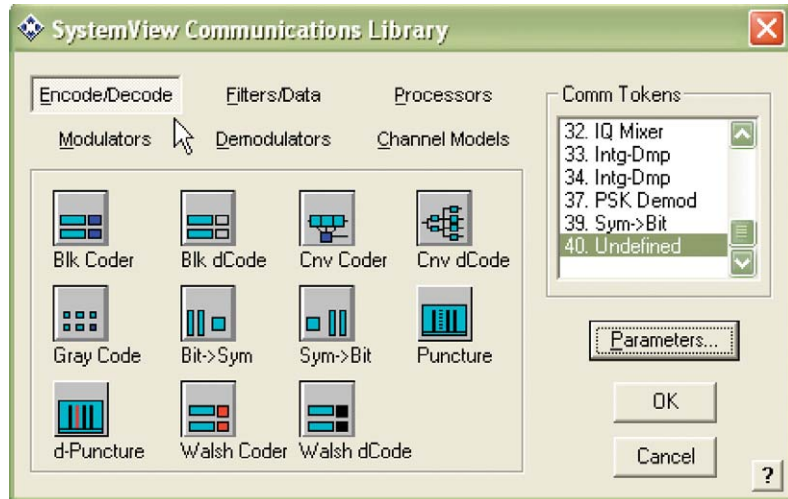


# Agilent EEsof EDA SystemVue Communications Library

## Features

- Stream-driven system design and test
- Modulators and demodulators: costas loop demodulator, MFSK, MPSK, PPM, PWD, PWM, QAM, and more
- Supports analog, digital and mixed-mode system simulation
- Supports end-to-end system BER analysis
- Complete filter design package: FIR, IIR, custom, Laplace
- Channel models: Jakes, Rayleigh, Rician, Rummmler, and multipath
- Encoders and decoders: block (including BCH, Reed Solomon, Golay), convolutional (including Viterbi decoders), Gray encoder
- Baseband pulse shaping filters, raised cosine, root raised cosine, Gaussian, bit interleavers and deinterleavers, and more



**The SystemVue Communications Library supports various encoding/decoding schemes, modulators, demodulators, and channel models needed for developing today's next-generation communications systems.**

## Overview

SystemVue is a software environment for communications, DSP, and RF analog system design. The optional Communications Library enhances the SystemVue core libraries with key models required for system-level communications design. This library contains all of the tools necessary to develop modern communications systems. Typical applications include PCS/cellular radios (GSM, CDMA, TDMA, pi/4 DQPSK), cordless phones, pagers, and modems (wired and wireless), satellite systems (GPS, DBS, LEOS), and spread-spectrum systems.

All of the elements required to perform complete end-to-end system simulations are available. This library includes error-correcting codes, baseband pulse shaping (raised cosine, etc.), Gray encoding,

modulation and demodulation, channel models, and data recovery. Complex models such as the Reed Solomon (RS) error-correction encoder/decoder, the Costas Loop, and the PLL demodulator are provided as individual functional blocks.

A baseband bit sync token is included in the library, and all standard synchronization loop architectures can be implemented. The early/late gate tracking loop and sliding loop correlators used in PN type CDMA spread spectrum systems can also be added to the simulation. Complete BER curves can be produced in a single run, and can be optimized so that the run time at a particular Eb/No is proportional to that value. In this way time and accuracy are preserved as the system SNR changes from point to point.



## Library Tokens

### Modulators

Double sideband AM modulator  
Frequency controlled pulse train  
Frequency modulated pulse train  
M-ary frequency modulator  
Orthogonal frequency division  
Pulse position modulator  
Pulse width modulator  
Quadrature amplitude modulator  
Time division multiplex

### Filters

Constant modulus algorithm equalizer  
Integrate and dump filter  
Inverse sinc function  
Gold code generator  
PN sequence generator  
Walsh generator  
Numerically controlled oscillator

### Demodulators

Costas loop  
Non-coherent FSK demodulator  
Orthogonal frequency division demodulator  
Phase locked loop  
Pulse position demodulator  
PSK demodulator  
Pulse width demodulator  
QAM detector  
Time division demultiplex

### Channel Models

Fading channel  
Jakes mobile channel  
Multipath channel  
Narrow band interferer  
Rice fading channel  
Rummler fading channel

### Processors

Bit error rate (BER) Counter  
Bit synchronizer  
Compander  
Decompressor  
Convolutional data interleave  
Divide by N  
Error vector magnitude  
Interleave  
IQ Mixer  
Pulse shape  
QAM mapper  
QAM demapper

### Encoder/Decoders

Bit to symbol converter  
Block error correcting coder  
Block error correcting decoder  
Convolutional encoder  
Convolutional decoder  
Depuncture  
Gray encode/decoder  
Puncture  
Symbol to bit  
Walsh encoder/decoder

For more information about Agilent EEsof EDA, visit:  
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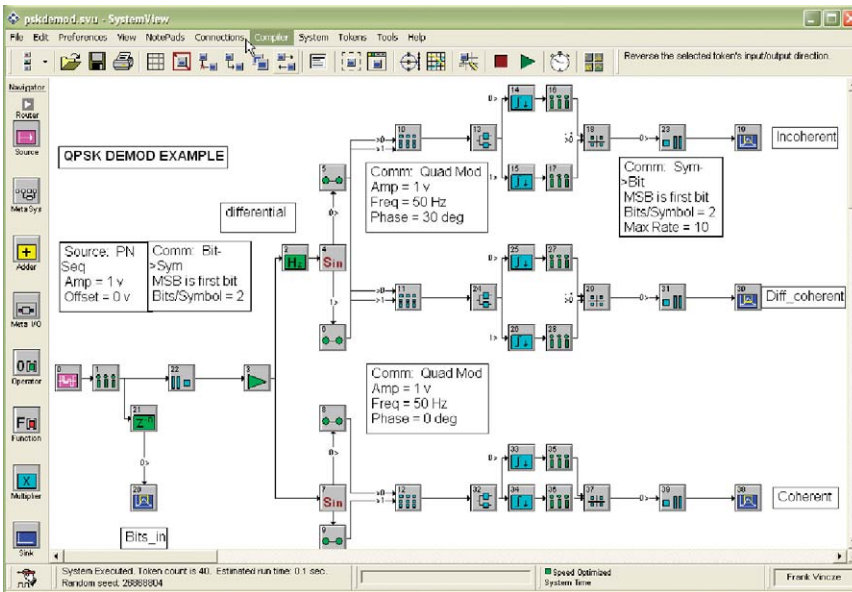
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The example shows the PSK DEMOD token from the SystemVue Communications Library operating in each of its three modes.

For more information on SystemVue and related products, visit: [www.agilent.com/find/eesof-eagleware](http://www.agilent.com/find/eesof-eagleware).

Product specifications and descriptions in this document subject to change without notice.

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