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VisSim Comm™

Communication System Design Software

Key Highlights

- Drag-and-drop diagram construction
- 200+ communication, signal processing, and radio frequency blocks
- Analog, digital, and mixed mode design
- Filter design
  - FIR
  - IIR
  - Pulse shaping filters
  - Raised cosine and root raised cosine
  - Arbitrary magnitude and phase
- Phase locked loops
- Distortion true RF elements
- Continuous, discrete, and hybrid simulation
- Estimation functions for BER, average, power, mean, variance, correlation, and delay
- Automated BER generation
- Phase scatter plots, eye plots, BER curves, complex FFT plots with averaging

System Requirements

- Windows XP, Vista, 7, or 8
- 128 MB RAM
- 125 MB hard disk space

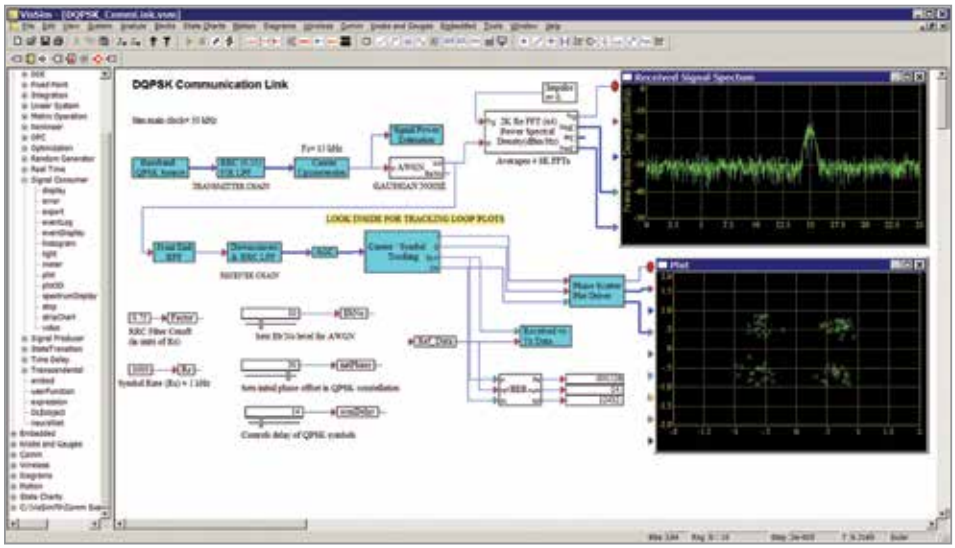
Introduction

VisSim Comm lets you model end-to-end communication systems at the signal or physical level. With its full complement of communication blocks and powerful, time-domain simulation engine, VisSim Comm provides fast and accurate solutions for analog, digital, and mixed-mode communication systems.

With VisSim Comm, you can seamlessly move among the stages of model construction, simulation, optimization, and validation. This means that you can simulate and view signal waveforms at any phase of the communication system chain.

VisSim Comm add-on modules include:

- **VisSim Comm C-Code:** Translates Comm blocks into ANSI C code. To translate standard VisSim blocks, you also need VisSim/C-Code.
- **VisSim Comm Red Rapids:** Supports real-time data from Red Rapids tuner cards.
- **VisSim Comm Turbo Codes:** Supports modeling of PCCC Turbo Codes.
- **VisSim Comm Wireless LAN:** Supports simulating 802.11a/b/g, Bluetooth, and ultra wide-band designs.



DQPSK communication link.

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VisSim Blocks

Summary of Standard

Animation
animate
animation3D
camera3D
light3D
lineDraw
mesh3D
world3D

Annotation
bezel
comment
date
index
label
scalarToStruct
scalarToVec
StructToScalar
variable
vecToScalar
wirePositioner

Arithmetic
-X
*
/
abs
complexToReIm
convert
gain
magPhase
pow
sign
summingJunction
unitConversion

Audio
audioIn
audioOut

Boolean
>
<
>=
<=
==
!=
and
not
or
xor

DDE
DDE
DDEreceive
DDEsend

Integration
integrator
limitedIntegrator
resetIntegrator

Linear Systems
stateSpace
transferFunction

MatLab Interface
MatLab Expression
MatLab Read Variable
MatLab Write Variable

Matrix Operations
buffer
diag
dotProduct
eigenvalues
fft
ifft
indexAssigned
invert
linearSolve
maxElement
minElement
matrixConst
matrixIn
matrixMerge
matrixOut
matrixSize
meanSmooth
medianSmooth
multiply
polyFit
polyRoots
psd
reshape
splineFit
transpose
vectorSort
vsum

Nonlinear
case
crossDetect
deadband
delayedSwitch
init
limit
map
max
merge
min
quantize
relay
sampleHold

Optimization
constraint
cost
globalConstraint
parameterUnknown
unknown

Random Generator
beta
cauchy
erlang
gamma
gaussian
pareto
PRBS
rayleigh
triangular
uniform
weibull

Real-Time
rt-DataIn
rt-DataOut
ActiveXread
ActiveXwrite

State Chart
statechart
trigger

State Transition
stateTransition

Signal Consumer
display
error
eventDisplay
eventLog
export
histogram
light
meter
plot
plot3D
spectrumDisplay
stop
stripChart
video

Signal Producer
button
Const
dialogConstant
dialogTable
import
parabola
pulseTrain
ramp
realTime
sawtooth
sinusoid
slider
squareWave
step
timeStamp
triangleWave

Time Delay
timeDelay
unitDelay

Transcendental
acos
asin
atan2
bessel
cos
cosh
exp
ln
log10
sin
sinh
sqrt
tan
tanh

General
embed*
expression
OLEobject
userFunction*

Bold blocks indicate new version 9 blocks and new features to existing blocks

Blocks followed by an asterisk (*) are not included in the Personal or Student Edition of VisSim

Comm Blocks

Summary of Blocks

Channels
Add. White Gaussian Noise (complex & real)
Binary Symmetric Channel
Jakes Mobile*
Propagation Loss*
Rice/Rayleigh Fading
Rummler Multipath
Saleh-Valenzuela (complex & real)*
TWTA
Vector AWGN

Complex Math
Addition
Complex to Mag/Phase
Complex to Real/Imag
Conjugate
Division
Inverse
Mag/Phase to Complex
Multiplication
Power
Real/Image to Complex
Square Root

Demodulators
DPSK Detector (2, 4, pi/4, 8*, 16*, 32*)
FM Demodulator
IQ Detector*
PPM Demodulator
PSK Detector (2,4,8*,16*)
PAM Detector (2,4,8,16)
QAM Detector (16, 32, 64*, .128*, 256*)

Digital Elements
Accumulate and Dump
Binary Counter
Bits to Symbol
Buffer and Unbuffer
Divide by N
D Flip Flop
JK Flip Flop
Mux/Demux*
Packet Timing*
Parallel to Serial
Pulse Extend
Queue*
Serial to Parallel
State Machine*
Symbol to Bits

Encoders and Decoders
Block Interleaver
Convolutional Encoder
Convolutional Interleaver*
Depuncture*
Gray Decoder and Encoder
Hamming Decoder and Encoder
Manchester Encoder
Puncture*
Reed-Solomon Decoder and Encoder
Trellis Decoder and Encoder*
Viterbi Decoder (hard & soft)

Estimators
Average Power (complex & real)
DER Control (#errors)
DER Curve Control
Bit/Symbol Error Rate
Complex Correlation*
Correlation*
Delay Estimator
Event Time
File Correlation (complex & real)*
Frequency Counter
Mean
Median*
Min/Max
Variance
Vector Correlation*
Weighted Mean*

Filters
Adaptive Equalizer (complex & real)
Discrete Equalizer (complex & real)
File FIR
FIR
IIR
MagPhase*
Pulse Shaping Filter
Sampled File FIR*
Variable Spaced Equalizer (complex & real)

Fixed Point
Fixed Point FIR
Fixed Point IIR
Fixed Point VC) (complex & real)

Instruments
BER Curve Display
Oscilloscope Display
Spectrum Analyzeer (complex & real)
Convolutional Encoder

Modulators
AM
ASK
DPSK (2,4,pi/4,8*,16*,32*)
FM
FSK
IQ*
MSK
PM
PAM(4,8)
PPM (real)
PSK (2,4,8*,16*0
QAM (16,32,64*,128*,256*)
SQPSK

Multirate Support
Clock Edge*
Clock Extend*
Interpolator*

Operators
A/D Converter
Compander
Complex Exponential
Complex FFT, IFFT
Conversions
D/A Converter
Delay (complex & real)
Gain (dB)
Integrate & Dump (complex & real)
I/Q Mapper*
Max Index
Modulo
Oscilloscope (core)
Phase Rate
Phase Unwrap*
Polynomial
Spectrum Analyzer (complex & real)
Subsample
Vector FFT

Phase-Locked Loops
Charge Pump
PLL Loop Filters (2nd, 3rd* order)
Type 2 Phase Detector
Type 3 Phase/Freq Detector
Type 4 Phase/Freq Detector*

RF Components
Amplifier
Antenna*
Attenuator
Cable*
Coupler
Double Balanced Mixer*
RF Conversons
RF Gain
Splitter/Combiner
Switch
Variable Attenuator*

Signal Sinks
File Write
File Value
Wave Write

Signal Sources
Complex Tone
File Data
Frequency Sweep
Impulse
Impulse Train
Noise
PN Sequence
Poisson Arrivals*
Random Distribution
Random Seed
Random Signals
Rectangular Pulses
Sinusoid
Spectral Mask*
VCO (complex & real)
Vector Constant
Walsh Sequence*
Waveform Generator

Vector Operations
Matrix to Vector
Subvector
Vector Bits to Symbols
Vector Demux
Vector Merge
Vector Mux
Vector Symbols to Bits
Vector to Matrix

***Not included with VisSim Comm PE**