

Communications Blockset™ 4

Design and simulate the physical layer of communication systems and components

Communications Blockset™ extends Simulink® with a comprehensive library of blocks for designing and simulating the physical layer of communication systems for commercial and defense applications. The blockset helps you model wireless and wireline systems and their semiconductor components.

The blockset provides channel models, error detection and correction blocks, and modulation techniques that let you characterize and optimize system performance. These blocks let you rapidly create a golden reference design and test bench, which you can use to develop and verify a fixed-point implementation.

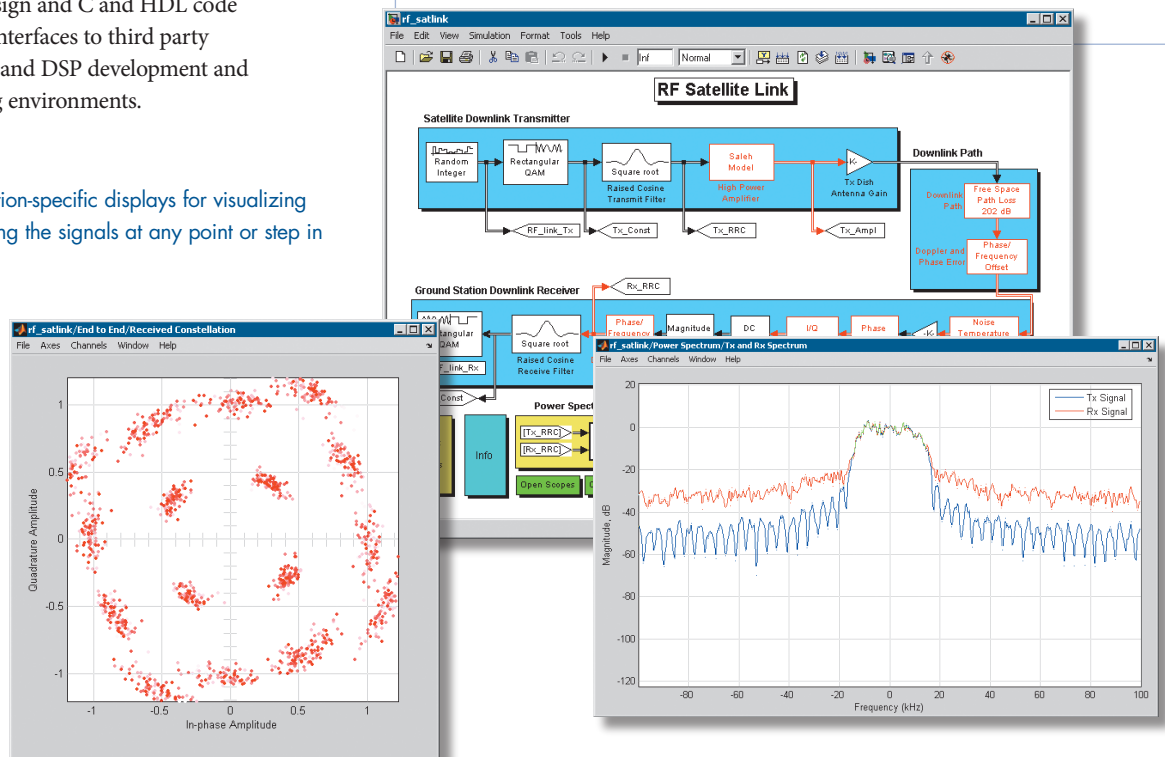
The blockset includes sample models that provide a starting point for implementing MIMO, OFDM, and other advanced system architectures.

Communications Blockset software seamlessly integrates with other MathWorks™ tools for filter design and C and HDL code generation, and interfaces to third party verification tools and DSP development and rapid prototyping environments.

Communication-specific displays for visualizing and analyzing the signals at any point or step in your model.

KEY FEATURES

- Hierarchical, block-based models for visually conveying complex designs
- Blocks for designing and simulating the physical layer of communications systems, including source coding, block and convolutional coding, interleavers, filters, and modulators
- Sources, such as random integer and binary generators, PN and Gold code sequences, and sinks, such as error-rate calculations, eye diagrams, and constellation plots
- Channel models, including AWGN, Multipath Rayleigh & Rician Fading, and RF impairments, including nonlinearity, phase noise, thermal noise, and phase and frequency offsets
- Integration with Communications Toolbox™ for post-simulation analysis
- Channel visualization tool for visualizing and exploring time-varying communications channels



Functional Blocks

Communications Blockset provides blocks for a typical cascade of random source, transmitter, channel model, receiver, and BER measurement. Supplied blocks include:

Data Sources: Barker, Gold, Hadamard, Kasami, OVFS, PN, Walsh, Bernoulli, and Poisson

Digital and Analog Modulation types: Binary, QAM, FSK, PSK, CPFSK, TCM, LLR, and Approximate (soft demod) LLR

Error Detection & Correction: APP, BCH, RS, LDPC, Viterbi, and Hamming

RF Impairments: I/Q Imbalance, Memoryless Nonlinearity, Phase Noise and Phase/Frequency offset

Channel Models: AWGN, Binary Symmetric, Multipath Rayleigh and Rician Fading

Symbol and Carrier Synchronization

methods: Early-Late, Gardner, Mueller-Muller, Squaring models, 2-P Power method, and M-Power method

Equalization algorithms: CMA, LMS, NLMS, Signed LMS, MLSE, RLS, and RLS-DFE

Performance Measurements: Eye Diagram, Scatter Plot, BER Calculation, and Signal Trajectory

Required Products

Communications Toolbox™
MATLAB®
Signal Processing Blockset™
Signal Processing Toolbox™
Simulink®

Related Products

Filter Design HDL Coder™. Generate HDL code for fixed-point filters

RF Blockset™. Design and simulate the behavior of RF systems and components in a wireless system

Real-Time Workshop®. Generate C code from Simulink® models and MATLAB® code

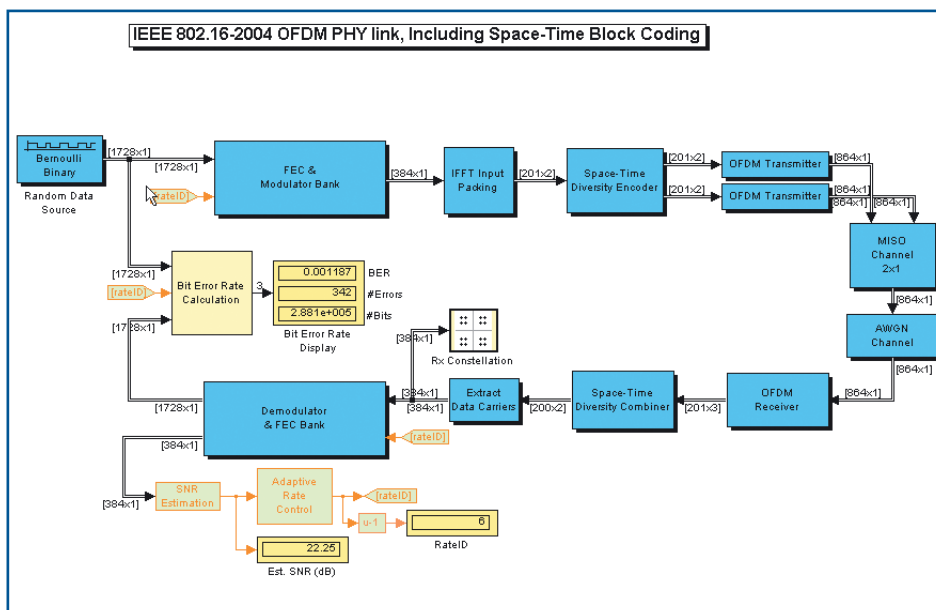
Simulink® Fixed Point™. Design and simulate fixed-point systems

Simulink® HDL Coder™. Generate HDL code from Simulink® models and MATLAB® code

For more information on related products, visit www.mathworks.com/products/commblockset

Platform and System Requirements

For platform and system requirements, visit www.mathworks.com/products/commblockset



IEEE 802.16-2004 OFDM Model, including the Space-Time Block Coding (STBC) for MIMO and WiMAX applications.

Resources

VISIT
www.mathworks.com

TECHNICAL SUPPORT
www.mathworks.com/support

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