Core Scientific Systems Private Ltd.

SATELLITE CHANNEL SIMULATOR

(SCS-01-09)

Satellite Channel Simulator provides integrated satellite, environment, and receiver models and provide both RF signals for testing external receivers as well as various receiver models. Both internal receiver models as well as user supplied models are integrated using Application Programming Interface (API). Built in analysis tools provide performance parameters for receivers.

Integrated models allow high fidelity simulation of waveform distortion due to relative motion between the source and receiver. Precise group and phase changes, better than 1 mm accuracy are generated.

- Highly integrated satellite channel simulator
- Independent satellites, channels, and receiver functions
- Can be used as satellite link emulator (using external RF source)
- Generates precise digital and RF signals at the receiver antenna ports
- Can integrate receiver model and provide performance estimate
- Versatile Windows™ based GUI
- High precision
- MIMO capabilities

SPECIALTY:

- Large delay range with smooth phase changes
- Large dynamic range to accommodate GPS type signals
- Group delay, phase, and other parameters commensurate with GPS and other GNSS signals (with suitable source generators can be used as GPS/GNSSS simulator)
- Versatile environmental models: emulating various fading models, rain models, ionospheric models, tropospheric models, scintillation models – provides appropriate signal strength, group, and phase delay, Independent fading and scintillation models can be independently controlled to provide amplitude, phase fluctuations, and their spectral distribution
- Transmitter and Receiver Antenna Models
  - 3-D amplitude, phase, and group delays
  - Independent lever arm
- Satellite Orbital Parameters: independent orientation,revolution
- Platform motion
  - 6DOF
  - Independent lever arm specifying independent antenna motions w.v. to center of platform motion
- Noise: Gaussian, White Arbitrary Colored Noise
- Interference: Co-channel, out-of band, pulsed (dynamic range to 130 dB)
- Ionosphere: Group delay, phase advance, scintillation
- Troposphere: fading
- Transmitter Non linearities (optional)
- Multipath signals – models scattered or reflected signal due to any satellite channel (optional)

Core Scientific Systems Pvt.Ltd.
Mail: products@coresspl.com
www.coresspl.com

SATELLITE CHANNEL SIMULATOR

(DASR--HD--003--05)

SOURCE MODELS:

- Multiple satellites (LEO, MEO, GEO)
- Missile and High Dynamics transmitters with arbitrary 6DOF dynamics
- Variety of waveform:
- BPSK/QPSK/SQPSK
- UQPSK, M-PSK, GMSK
- BOC (m, n)
- FEC Encoding
- 1 Mbps to 1.5 GSPS
- Symbol Rate up to 1GSPS
- Custom
- RF, IF, and Digital Outputs

CHANNEL MODELS:

- Multipath – specular, Ricean, Arbitrary Scattering Models
- Nonlinearity – Transmitter Nonlinearities
- Antenna Gain and Phase: Transmitter and receiver antennas gain and phase 3-D models
- Noise: Gaussian, White, Arbitrary Colored Noise
- Interference: co-channel, out of band, pulsed
- Built-in ADC to accept RF or IF from external sources
- Overall bandwidth up to 350 MHz
- Ionosphere: Propagation, Scintillation
- Troposphere: Fading
- Rain: Attenuation, Fading
- Plasma: Plasma Reentry, Nuclear Effects, Custom

RECEIVER MODELS:

- Receiver Dynamics: arbitrary way points and 6DOF
- Receiver Gain/Nonlinearity/Noise/Bandwidth
- AGC characteristics
- Carrier acquisition range (±10 KHz to ±5 MHz)
- Carrier Loop Bandwidth
- Demodulation – all waveforms
- IF level and Doppler Measurement

DECODING:

- Viterbi (1/2 … 7/8)
- 8160, 7136 LDPC
- (128, 120)2 TPC
- 4D TCM
- Reed-Solomon (CCSDS, DVB)
- Custom

BIT SYNCHRONIZATION:

- PCM Codes: NRZ-L/M/S, DNRZ, Bi-Phase-L
- Filters: Matched, Custom FIR

CCSDS PROCESSING:

- Frame Synchronization
- Reed Solomon or LDPC Error Correction
- Raw Data Archive

PERFORMANCE MONITOR:

- BER
- Eb/No
- Spectrum Monitor
- Custom

Core Scientific Systems Pvt.Ltd.
Mail: products@coresspl.com
www.coresspl.com

For pricing and more details contact
Core Scientific Systems Pvt.Ltd.
Mail: products@coresspl.com
www.coresspl.com