



COMMUNICATION  
SYSTEMS, INC.



## INTRODUCING THE EXPLORER SATELLITE SIMULATOR

*by Space Coast Communication Systems, Inc.*

The eXplorer UHF Satellite Simulator is a low cost, flexible platform for emulating UHF SATCOM and LOS behaviors. This system has provided years of consistent performance and configurability owing to an ultra reliable digital backbone. Since the eXplorer is programmable future manifestations can emulate other satellite systems including MUOS, TCDL or Inmarsat.

The eXplorer Satellite Simulator allows the user to configure on a channel-by-channel basis real world parameters such as time delay, Doppler and Doppler rate, additive white Gaussian noise (AWGN) and 5 and 25 kHz transponder effects. The models have been extensively characterized against the actual satellites. As opposed to a HW-based solution each eXplorer behaves identically.

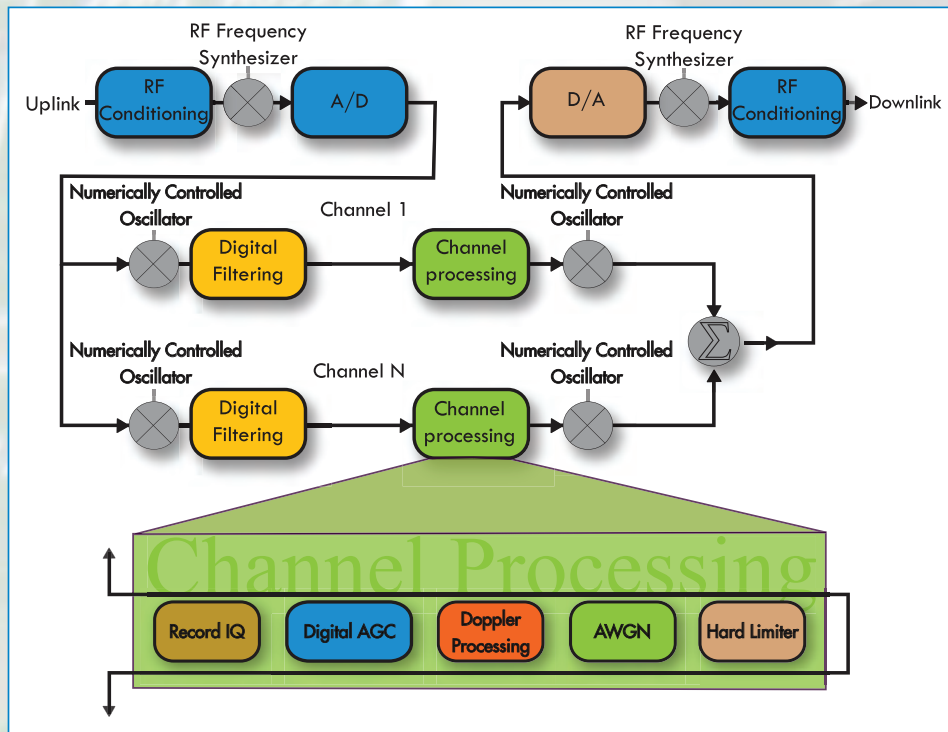
In the basic configuration, the eXplorer Satellite Simulator allows the user to interface at either RF (243-318 MHz) or optionally at IF (60-80 MHz). Unlike any other satellite simulator eXplorer allows the user to record, on an internal hard drive, the near baseband in-phase and quadrature (IQ) signal.



## FEATURES

- 1, 2, 4 or 8 independent SATCOM channels
- Internal ovenized reference (or user-provided external)
- 70 MHz input/output optional
- 30 dB dynamic range on input (uplink)
- 40 to 0 dBm signal power on output (downlink), 50  $\Omega$  impedance
- Programmable latency 100 usec to 1 second
- 5 or 25 kHz transponder 6-pole Chebyshev filters
- hard-limiting transponder amplifier
- spectrally invert individual channels
- programmable Doppler and Doppler rate
- AWGN, 22 to 79 dB C/NO

## EXPLORER SATELLITE SIMULATOR BLOCK DIAGRAM



### TECHNICAL SPECIFICATIONS

Socket-based control interface. Java-based client software runs on any Java-enabled operating system. Supports simultaneous FOW/CCOW order-wire channels required by Integrated Waveform / CIB. Ultra reliable digital multi-channel backbone based on Red Rapids Waverunner M253, Linux 2.6 kernel and customized fixed latency drivers. Signal capture capability for off-line post-processing. For more information contact Space Coast at [info@spacecoastcomm.com](mailto:info@spacecoastcomm.com)

### FEATURE COMPARISON

	Legacy	Explorer
Time Delay	✓	✓
Frequency Translation	✓	✓
Doppler/Doppler Rate	✓	✓
AWGN	✓	✓
Filtering	HW	SW
Hard Limiting	HW	SW
Calibration	HW	SW
Out of Band Emissions	YES	NO
Spectral Inversion		✓
TCP-IP Command/Data Interface		✓
Range Walk		✓
Record-Playback		✓