

Repeatable Production Line GPS Testing

The CAST-500 is a dual frequency GPS simulator that executes a series of predefined tests for production testing. Three user-defined test scenarios are delivered with the simulator. New scenarios can be created with the Scenario Generator option, or by more capable CAST simulators. CAST GUI Software is included for autonomous operation, and can also be used for remotely controlling the simulator from a Windows PC via Ethernet. A single PC may control multiple CAST-500 units simultaneously. Each CAST-500 can output GPS signals for testing up to 64 receivers simultaneously.

The CAST-500 is capable of generating a full constellation of GPS with 8 to 12 satellites in-view selected from the defined 32 Pseudo Random Noise codes. It generates signals for C/A Code on L1 and P Code on L1 and L2.

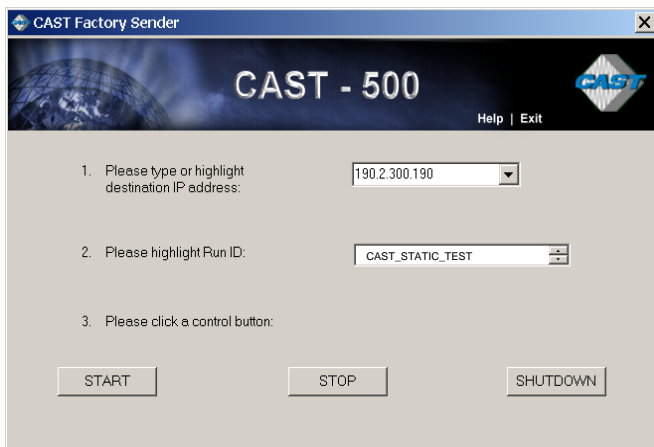


Simulator Features

- 8 to 12 C/A and P Code SVs on L1 and L2
- Individual SV Power and Mode Control
- Modifiable Navigation Message
- Remote Scenario Loading
- Operates Autonomously, or under Remote Command/Control
- Multiple CAST-500's Controlled by Remote Host

Scenario Features

- 6-DOF Motion Generation Capability
- Selectable Host Vehicle Parameters
- Complete SV Constellation Editing
- Spoofer Simulation
- SV RAIM Events
- Ionosphere Modeling
- Troposphere Modeling
- Satellite Clock Errors
- Waypoint Navigation
- Multipath Modeling
- Time-tagged Satellite Events
- Selective Availability Modeling
- Antenna Pattern Modeling



The CAST-500 Remote Interface

System Specifications

Output Frequency

- GPS L1 1575.42 MHz
- GPS L2 1227.60 MHz

Maximum Dynamics

- Velocity > 60,000 m/s
- Acceleration $\pm 150,000$ m/s²
- Jerk $\pm 150,000$ m/s³

Signal Level

- GPS L1 C/A Code -160 dBW
- GPS L1 P Code -163 dBW
- GPS L2 P Code -166 dBW

Signal Level Control

- Range +20, -30 dB
- Resolution 0.1 dB

L1/L2 Differential Delay

- Range ± 0.3 m
- Resolution < 1 mm

Signal Accuracy

- Pseudorange 1 mm
- Pseudorange Rate 1.5 mm/s
- Delta Pseudorange 1.5 mm
- Interchannel Bias < 1 mm
- Uncontrolled Bias < 1 mm
- Bias Repeatability (initial) < 1 mm
- Bias Stability (operational) < 1 mm

Signal Quality

- Spurious < -30 dBc
- Harmonics < -35 dBc
- Reference Oscillator 100 MHz OCXO
- Frequency Stability 3×10^{-8} per day

System Configuration

- GPS Satellites Generated 8 to 12 L1 and L2
- Size (H x W x D) 17" x 14" x 10"
- Weight (approximate) 50 lbs
- Power Required 110/220 VAC
50/60 Hz, 600 W
- Operating System Windows XP, Lynx RTOS

System Options

- Additional Vehicle Scenarios
- Test up to 64 UUT
- Y-Code
- SAASM
- M-Code
- SBAS

Typical Configuration

