

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 more capable CAST simulators and ported to the CAST-500 via Ethernet. Software is included 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 16 satellites in-view selected from the defined 32 Pseudo Random Noise codes. It generates signals for 12 to 16 satellites of C/A Code on L1 and P Code on L1 and L2.

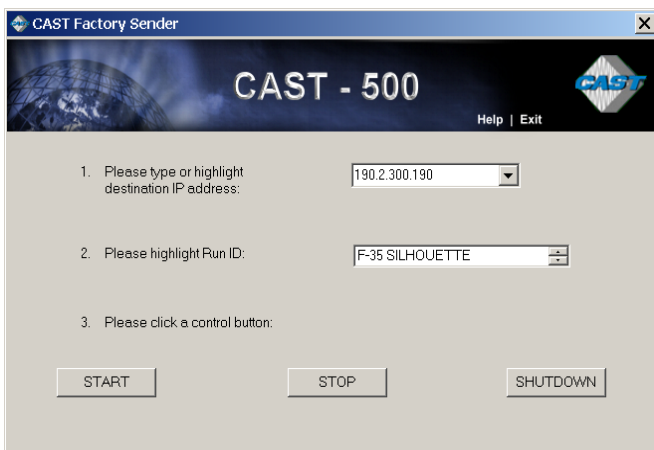


Simulator Features

- 12 to 16 C/A and P Code SVs on L1 and L2
- Individual SV Power and Mode Control
- Modifiable Navigation Message
- Remote Scenario Loading
- Operates 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
- DGPS Corrections
- SV RAIM Events
- Ionosphere Modeling
- Troposphere Modeling
- Satellite Clock Errors
- Waypoint Navigation
- Multipath Modeling
- Modifiable Navigation Message
- 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 ± 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 16 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 QNX, Lynx RTOS

System Options

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

Typical Configuration

