



# CAST-500

*Production GPS Simulator*



## 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 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.

## Scenario Features

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- **6-DOF Motion Generation Capability**
- **Selectable Host Vehicle Parameters**
- **Complete SV Constellation Editing**
- **Spoofing Simulation**
- **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**

## Simulator Features

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- **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**

## System Specifications

### Output Frequency

- GPS L1 1575.42 MHz
- GPS L2 1227.60 MHz
- GPS L5 1176.45 MHz

### Maximum Dynamics

- Velocity > 60,000 m/s
- Acceleration  $\pm 150,000$  m/s<sup>2</sup>
- Jerk  $\pm 150,000$  m/s<sup>3</sup>

### 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  $\pm 30$  dB
- Resolution 0.1 dB

### L1/L2 Differential Delay

- Range  $\pm 0.3$  m
- Resolution < 1 mm

### Signal Accuracy

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

### Signal Quality

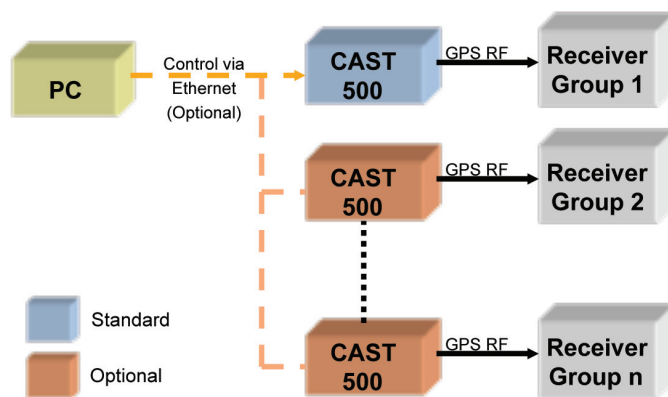
- Spurious < -45 dBc
- Harmonics < -50 dBc
- Reference Oscillator 100 MHz OCXO
- Frequency Stability  $3 \times 10^{-8}$  per day

## System Configuration

- GPS Satellites Generated Up to 12 L1 and L2
- Size (H x W x D) 17" x 14" x 10"
- Weight (approximate) 34 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
- L2C
- L5
- L5-I/Q



Typical Configuration