

# CAST-110 Interference Generation System

## Interference Generation Test System

The CAST-110 interference generation system may be operated in standalone mode (see reverse side) or may be used as a supplement to a CAST simulator.

When augmenting a CAST simulator with the interference generator option, the user may emulate jamming threats that occur in hostile environments using their simulator inside a chamber or test laboratory.

Initial position, motion profiles and signal transmission characteristics for broadband and narrowband jammers may be specified using a CAST simulator. The system has the capability to record navigation messages from the GPS receiver that report jamming relevant values including J/S ratios, satellite Azimuth and Elevation and even individual satellite pseudoranges. By making these recordings available to users, the test report creation process is greatly simplified.

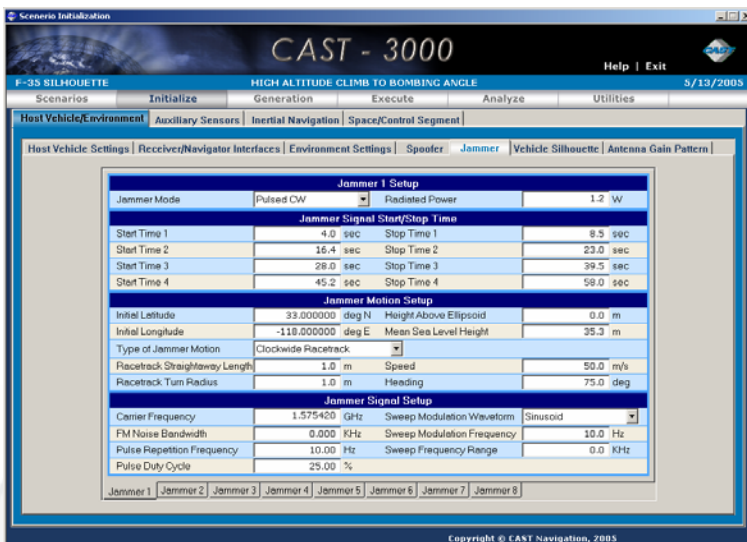
The system shown at right depicts a CAST simulator supplemented with 8 interference generators: 4 Rohde & Schwarz arbitrary waveform narrowband generators and 4 NoiseCom broadband generators.

### System Features

- Jammer configurations are defined prior to execution and are associated with scenarios stored on the simulator.
- During scenario execution, the jammer and GPS RF signals are generated and transmitted together as a composite signal.
- Each jammer can be assigned an initial speed, altitude and stationary or dynamic trajectory profile.
- A programmable jamming signal source is commanded in real time as canned scenarios fly a particular flight path or as a flight path is defined externally using an aircraft model.



*The CAST-110 as a CAST Simulator Option*



*The CAST-110 Interface on a CAST Simulator*

## System Specifications

### Output Frequency

- Narrowband 1 GHz to 2 GHz
- Broadband L1 1575.42 MHz  
L2 1227.60 MHz

### Maximum Dynamics

- Velocity  $\pm 1,000$  m/s
- Altitude 0 to 100,000 m

### Signal Level

- Narrowband -140 to +13 dBm
- Broadband -102 to +25 dBm

### Narrowband Modes of Operation

- CW
- Pulsed CW 0.01 Hz - 100 kHz Pulse Rate  
Variable Duty Cycle
- Swept CW
  - Sweep Types Sinusoid, Triangle, Ramp
  - Sweep BW 0 - 400 kHz
  - Sweep Rate 0.01 Hz - 100 kHz
- FM Noise 0 - 400 kHz Bandwidth
- Pulsed FM Noise 0.01 Hz - 100 kHz Pulse Rate  
Variable Duty Cycle
- Wideband Noise 20 MHz Bandwidth

### Narrowband Signal Quality

- Harmonics  $< -30$  dBc at levels  $\leq +8$  dBm
- Subharmonics  $< -50$  dBc
- Nonharmonics  $< -64$  dBc

### System Configuration

- Size (H x W x D) 84" x 24" x 32" (8 jammers)  
54" x 24" x 32" (4 jammers)
- Weight (approx) 300 lbs
- Power Required 110/220 VAC  
50/60 Hz, 1200 W
- Operating System Windows OS

## Standalone Interference System

The CAST-110 interference generation system provides repeatable support for testing anti-jam performance of GPS receivers. The system enables the user to specify jamming levels and signal transmission characteristics for broadband and narrowband jammers.

Modulation types on the interfering signal can be commanded dynamically. Jamming modes include Continuous Wave, Pulsed Continuous Wave, Swept Continuous Wave, FM Noise, Pulsed FM Noise, and Wideband Noise.

CAST standalone interference systems are currently being used for U.S. military testing and operations.

## System Features

- Up to eight independently controlled jamming signals can be generated simultaneously.
- Each interference source's magnitude, frequency and type of modulation may be dynamically controlled.
- The user may manually adjust jammer levels and signal characteristics for each interference source in real-time.
- Broadband signals are optimized to deliver Gaussian amplitude distribution with adjustable power output levels.



*The CAST-110 as a Standalone System*