

# Broadband Signal and Environment Generator

## CS25000F Series

Generate accurate broadband communications and radar signals and environments



The Broadband Signal and Environment Generator (BSG) is used to create precise, repeatable communications and radar signals, as well as realistic environments for testing broadband and frequency agile communications and radar systems.

- Generate communications and radar signals with instantaneous bandwidths up to 500 MHz and hop rates to 500,000 hops per second
- Create continuous, burst and hopped signals (FSK, MSK, PSK, QAM, ASK, OOK, AM, FM, PM, SSB) and radio and SATCOM specific waveforms with powerful VSS software
- Maximize signal and environment realism with up to 88 seconds of full bandwidth signal memory (150 minutes with optional RAID configuration)
- Extended playback times using digital up conversion with tuning
- Control all time, frequency and modulation signal parameters
- Combine real world signal and environment recordings with digitally generated impairments
- Emulate Golden Radios using real radio recordings captured with CS35000F Series Broadband Signal Analyzers and Recorders
- Add digitally precise signal impairments including thermal noise, phase noise, passband amplitude and phase distortion, CW and co-channel interference, and multi-path distortion

The **Aeroflex Broadband Signal and Environment Generator (BSG)** series provides the widest bandwidth and deepest memory signal sources available. The BSG combines a very deep memory, a very high-speed arbitrary waveform generator and a broadband RF upconverter with powerful signal generation software. The new F-Series BSG provides enhanced performance and capabilities with high speed dual-Xeon processors, gigabit Ethernet, deeper memory, larger removable disk storage, fast disk to memory transfers, and RAID options. The BSG instruments have bandwidths of up to 500 MHz and full bandwidth signal memory configurations up to 88 seconds (to 150 minutes with optional RAID). The bandwidth, memory depth and dynamic range make the BSG a powerful tool for broadband satellite communications, broadband wireless network communications, agile radio communications, jammer test, and radar test. A modular, software defined instrument architecture allows easy imports of user created waveforms. Vector Signal Simulator (VSS) software creates signal files for generic nPSK, nQAM, nFSK, MSK, ASK, OOK, AM, FM, PM, SSB, CW, tone combs, and notched noise signals. Commercial wireless standards are also available. Any of these generic signal types can be gated or bursted in time as well as hopped in frequency with digital precision and easy-to-use controls. Real signals, including signals recorded using Aeroflex's CS35000F Broadband Signal Analyzers or other recorder sources can be imported, combined with digitally generated signals, and then played back on the BSG for ultra-realistic test scenarios. Impairments can be added to the signals including thermal noise, phase noise, passband amplitude and phase distortion, co-channel and adjacent channel interference, and multi-path distortion. VSS software provides the unique ability to mix any combination of signals and impairments to generate complex signal environments. Aeroflex's Vector Signal Player (VSP) software provides simple controls for signal file selection, and output frequency and power control. Aeroflex's upconverters use real (non-I/Q) conversion architectures, generating high dynamic range waveforms without the carrier leakage and signal image problems associated with I/Q modulators found in traditional signal sources.

For the very latest specifications visit [www.aeroflex.com](http://www.aeroflex.com)

Select bandwidth, dynamic range, memory depths and options to match your most demanding signal and environment generation applications (example configurations shown).

Model Number	Bandwidth	RF Range (Hz)	SFDR (typical)	Recording Time (max)	Applications
<b>CS25020F</b>	86 MHz	Baseband	65 dB	88 sec (solid state)	High data rate PSK/QAM modulator test, satellite transponder simulation, linkloading, agile radio test, radar test, jammer test, military radio test, MILSATCOM test, environment simulation, UHF/VHF radio test, cellular test, DVB/HDTV test, WLAN test, link simulation, drive test playback
<b>CS25020F-R</b>	64 MHz	Baseband	65 dB	>150 min (stream from RAID)	
<b>CS25020F-RF</b>	60 MHz	2 MHz to 18 GHz	58 dB	88 sec (solid state)	
<b>CS25020F-RF-R</b>	42 MHz	2 MHz to 18 GHz	58 dB	>150 min (stream from RAID)	
<b>CS25040F</b>	160 MHz	Baseband	50 dB	75 sec (solid state)	radio test, MILSATCOM test, environment simulation, UHF/VHF radio test, cellular test, DVB/HDTV test, WLAN test, link simulation, drive test playback
<b>CS25040F-R</b>	100 MHz	Baseband	50 dB	>120 min (stream from RAID)	
<b>CS25040F-RF</b>	120 MHz	2 MHz to 18 GHz	45 dB	75 sec (solid state)	
<b>CS25080F</b>	295 MHz	Baseband	50 dB	40 sec (solid state)	test, link simulation, drive test playback
<b>CS25080F-RF</b>	255 MHz	10 MHz to 18 GHz	45 dB	40 sec (solid state)	
<b>CS25150F</b>	500 MHz	Baseband	50 dB	20 sec (solid state)	test, link simulation, drive test playback
<b>CS25150F-RF</b>	400 MHz	10 MHz to 18 GHz	40 dB	20 sec (solid state)	

**Vector Signal Simulator (VSS) Software**

Advanced signal generation software for creating communication signals and broadband environments including mixed signal environments, realistic impairments and additive recorded signals. Intuitive graphical interface creates signals in single and multiple carrier formats with full control of all RF parameters and underlying data. Playback actual recorded RF signals captured on CS35000F Series Broadband Signal Analyzers.

**VSS Signals Include**

QAM to 1024, PSK to 256, nFSK, MSK, ASK, OOK  
 AM, FM, PM, SSB, tone combs, NPR  
 GSM, IS-136, EDGE, IS-95, WCDMA, CDMA2000  
 Pulsed, bursted and frequency hopped waveforms  
 Additive White Gaussian Noise (AWGN)  
 Mixed signal mode

**VSS Software Impairments Include**

Banded thermal noise  
 Phase noise  
 CW and co-channel interference  
 Passband phase distortion  
 Passband amplitude distortion  
 Multiple-signal channel loading  
 Multi-path (gain, delay and Doppler)

**All Models Include**

Dual-high speed Xeon processors with 4 GB system memory, dual-gigabit Ethernet, internal system hard drive, removable 73 GB data drive, DVD-R/W, USB, video, keyboard, and monitor ports, powerful Vector Signal Simulator (VSS) signal and environment creation software, and Vector Signal Player (VSP) control software.

**Broadband Signal and Environment Generator Options**

Data Memory 4 GB to 28 GB  
 RAID Storage or Output Streaming 500 GB to 2 TB

*Upconverter Options*

*Tunable or fixed  
 Up to 40 GHz in bands*

*Memory Sequencing Option*

*High speed address sequencing*

*Sample Clock Option*

*Low phase noise*

*Output Options*

*Precision programmable attenuators  
 High speed attenuators  
 Reconstruction filters  
 High output power*

*Multiple/Mixed Channel Options*

*1 to 8 coherent or independent  
 I/Q baseband*

*Disk Storage Options*

*Fixed and removable drives  
 146 & 300 GB hard drives  
 RAID up to 2 TB*

*Multiple Signal Options*

*RF, baseband, digital, I/Q*

*Remote Control Option*

*Software control via  
 100/1000baseT Ethernet*

*Data Output Options*

*Broadband analog  
 High speed digital*

**EXPORT CONTROL:**

This product is controlled for export under the International Traffic in Arms Regulations (ITAR). A license from the U.S. Department of State is required prior to the export of this product from the United States.

**EXPORT WARNING:**

Aeroflex's military products are controlled for export under the International Traffic in Arms Regulations (ITAR) and may not be sold or proposed or offered for sale to certain countries including: Belarus, Burma, China, Cuba, Haiti, Iran, Liberia, Libya, North Korea, Somalia, Syria, Sudan, and Vietnam. See ITAR 126.1 for complete information.

**FINLAND**

Tel: [+358] (9) 2709 5541  
 Fax: [+358] (9) 804 2441

**FRANCE**

Tel: [+33] 1 60 79 96 00  
 Fax: [+33] 1 60 77 69 22

**GERMANY**

Tel: [+49] 8131 2926-0  
 Fax: [+49] 8131 2926-130

**INDIA**

Tel: [+91] 80 5115 4501  
 Fax: [+91] 80 5115 4502

**KOREA**

Tel: [+82] (2) 3424 2719  
 Fax: [+82] (2) 3424 8620

**SCANDINAVIA**

Tel: [+45] 9614 0045  
 Fax: [+45] 9614 0047

**SPAIN**

Tel: [+34] (91) 640 11 34  
 Fax: [+34] (91) 640 06 40

**UK Burnham**

Tel: [+44] (0) 1628 604455  
 Fax: [+44] (0) 1628 662017

**UK Cambridge**

Tel: [+44] (0) 1763 262277  
 Fax: [+44] (0) 1763 285353

**UK Stevenage**

Tel: [+44] (0) 1438 742200  
 Fax: [+44] (0) 1438 727601  
 Freephone: 0800 282388

**USA**

Tel: [+1] (316) 522 4981  
 Fax: [+1] (316) 522 1360  
 Toll Free: 800 835 2352



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[www.aeroflex.com](http://www.aeroflex.com)  
[info-test@eroflex.com](mailto:info-test@eroflex.com)



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