Broadband Signal and Environment Generator Family

Celerity CS25000 Series

Generate Accurate Broadband Communications and Radar Signals and Environments

The Broadband Signal and Environment Generator (BSG) creates precise, repeatable communications and radar signals and realistic environments for testing broadband and frequency agile communications and radar systems.

- Generate radio and radar signals with instantaneous bandwidths up to 500 MHz and hop rates to 500,000 hops per second
- Create FSK, MSK, PSK, QAM, AM, FM, bursted, hopped, and radio-specific waveforms with powerful VSS software
- Maximize signal and environment realism with up to 10 seconds of full bandwidth signal memory
- Control all time, frequency and modulation signal parameters
- Combine real signal and environment recordings with digitally generated impairments
- Emulate Golden Radios using real radio recordings captured with Celerity CS35000-series Broadband Signal Analyzers and Recorders
- Add digitally precise signal impairments including thermal noise, phase noise, passband amplitude and phase distortion, and CW and co-channel interference

The Aeroflex Broadband Signal and Environment Generator (BSG) family provides the widest bandwidth and deepest memory RF/baseband signal sources available today. The BSG combines a very deep memory, very high-speed arbitrary waveform generator and a broadband RF up converter with powerful signal generation software. The BSGs have bandwidths of up to 500 MHz and full bandwidth signal memory of up to 10 seconds. The bandwidth, memory depth and dynamic range make the BSG a powerful tool for broadband satellite communications, frequency agile radio communications, broadband wireless network communications, and radar test. An open, software defined instrument architecture allows easy imports of user created waveforms. Vector Signal Simulator software (VSS) creates signal files for commercial wireless standards as well as generic nPSK, nQAM, nFSK, CW, tone combs, and notched noise signals. Any of these generic signal types can be gated or bursted in time, as well as hopped in frequency. Real signals, including recorded signals from Aeroflex's Broadband Signal Analyzers or other recorder sources, can be imported and combined with digitally generated signals, and then played back on the BSG. Impairments can be added to the signals including thermal noise, phase noise, and passband amplitude and phase distortion. VSS provides the unique ability to mix any combination of signals and impairments to generate complex signal environments. Aeroflex's Vector Signal Player software (VSP) provides simple controls for signal file selection, output frequency con-
trol and output power control. Aeroflex's up converters 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.

Vector Signal Simulator Software
Advanced signal generation software for creating communication signals and broadband environments including 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. Mix different signals together and add realistic impairments. Play back actual recorded RF radio signals captured on CS35000-series Broadband Signal Analyzers for Golden Radio functionality.

VSS Signals Include
QAM to 1024, PSK to 256, GSM, IS-136, EDGE, IS-95, WCDMA, CDMA2000, FSK, MSK
Pulsed and frequency hopped waveforms, 802.11a, 802.11b, 802.11g
CW and tone combs
Mixed signal mode

VSS Software Impairments Include
Banded thermal noise
Phase noise
CW interference
Passband phase distortion
Passband amplitude distortion
Multiple signal channel loading
Multipath

All Models Include
An embedded Pentium controller with 512 MB RAM running Windows 2000
High speed 36 GB HD, 100baseT Ethernet adapter, keyboard, mouse and monitor connection
Powerful Vector Signal Simulator (VSS) signal and environment generation software
Vector Signal Player (VSP) control software
Precision synthesized time base

Broadband Signal and Environment Generator Options
Upconverter Options
Tunable or fixed
Up to 40 GHz in bands

Output Options
High speed address sequencing
Precision attenuators
High speed attenuators
Reconstruction filters
High output power

Sample Clock Option
Low phase noise

Disk Storage Options
Fixed and removable drives
73 & 146 GB HD, CD-RW, DVD-RW

Multiple Channel Options
1 to 8 coherent or independent I/Q baseband

Multiple Signal Options
RF, baseband, digital, I/Q

Controller Option
UltraSPARC/Solaris

Remote Control Option
10/100baseT Ethernet

Peripheral Options
Keyboard and mouse
Flat panel and CRT monitors

Real World Data Input Options
Wideband analog
High speed digital (LVDS, DECL, PECL, TTL)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Bandwidth</th>
<th>Spurious Free Dynamic Range</th>
<th>Max Generate Time at Full Bandwidth</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS25020</td>
<td>60 MHz</td>
<td>70 dB typ</td>
<td>10 seconds</td>
<td>High data rate PSK/QAM modulator test, satellite transponder simulation, link loading, agile radio test, radar test, environment simulation, UHF/VHF radio test, cellular test, DVB/HDTV test, WLAN test, link simulation</td>
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<tr>
<td>CS25025</td>
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<td>CS25040</td>
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<tr>
<td>CS25080</td>
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<td>45 dB typ</td>
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<tr>
<td>CS25132</td>
<td>500 MHz</td>
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High data rate PSK/QAM modulator test, satellite transponder simulation, link loading, agile radio test, radar test, environment simulation, UHF/VHF radio test, cellular test, DVB/HDTV test, WLAN test, link simulation