

# Broadband Signal Analyzer and Generator

## CS65000F Series



The Broadband Signal Analyzer and Generator (BSAG) quickly and accurately records, demodulates and analyzes advanced broadband and frequency agile communications and radar signals. The BSAG is also used to create precise, repeatable communications and radar signals, as well as realistic environments for testing broadband and frequency agile communications and radar systems.

- Record and analyze communications and generate radar signals with instantaneous bandwidths up to 400 MHz RF and hop rates to 500,000 hops per second
- Capture and playback up to 150 seconds of full bandwidth signals for detailed review, analysis and storage
- Extended playback and recording times using digital down and up conversion
- Measure time, frequency and modulation signal parameters quickly, accurately and simultaneously with a single instrument
- Demodulate continuous, burst and hopped signals (FSK, MSK, ASK, OOK, PSK, QAM, AM, SSB, FM, and PM) into analog data and digital bit streams
- Characterize and generate broadband next generation communications and radar signals with digital precision and repeatability using advanced BSAG analysis and creation software
- Capture transmission faults with this real time RF recorder and pre-trigger mode
- Simultaneously display frequency, waterfall, time, modulation (AM, FM, PM), and symbol plots
- Create stimulus/response operations using triggering and scenario operations

The **Aeroflex Broadband Signal Analyzer and Generator (BSAG)** Series provides the widest bandwidth and deepest memory RF/baseband signal analyzers and generators available. The BSAG combines broadband RF downconverters, wide bandwidth high dynamic range ADCs and very deep high speed memory with powerful DSP-based signal analysis software. The BSAG provides enhanced performance and capabilities, with dual-Xeon processors, gigabit Ethernet, deeper memory, larger removable disk storage, fast memory to disk transfers, and RAID options. The BSAG instruments have bandwidths of up to 500 MHz and full bandwidth signal memory configurations up to 150 minutes. The bandwidth, memory depth and dynamic range make the BSAG an essential tool for broadband satellite, broadband wireless network, agile radio, jammer, and radar test. The DSP software analyzes both real time signal inputs and signals captured into BSAG signal memory. Digital acquisition and processing achieve the highest fidelity, accuracy and repeatability. Signals recorded into memory can be saved to multiple medias; internal or removable hard drives, DVD-R/W drives, and RAID systems. Recorded signals can be imported into the BSAG generator and played back. Powerful and flexible data visualization allows simultaneous plotting of the signal in frequency, time and modulation domains. Measurement and analysis software packages include digital spectrum analysis, channelized signal power and ACPR, demodulation and analysis (PSK/QAM, FSK/MSK, OOK and ASK, AM, FM, and PM), NPR, radar pulse parameters, signal-specific agile radio and SATCOM signal analysis. Robust PSK and QAM (burst and continuous) signal demodulation 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, signal memory depths, and options to match your most demanding signal acquisition, analysis and recording applications (example configurations shown).

Model Number	Bandwidth	RF Range (Hz)	SFDR (typical)	Record/Play Time (max)	Applications
<b>CS65020F</b>	86 MHz	Baseband	65 dB	88 sec (solid state)	High data rate PSK/QAM demodulator test, satellite transponder monitoring, agile radio test, RF environment capture, radar test, jammer test, military radio test, MIL SATCOM test, UHF/VHF radio test, cellular test, DVB/HDTV test, WLAN band monitoring, UNII test, link monitoring, drive test
<b>CS65020F-R</b>	64 MHz	Baseband	65 dB	>150 min (stream from RAID)	
<b>CS65020F-RF</b>	60 MHz	2 MHz to 18 GHz	58 dB	88 sec (solid state)	
<b>CS65020F-RF-R</b>	42 MHz	2 MHz to 18 GHz	58 dB	>150 min (stream from RAID)	
<b>CS65040F</b>	160 MHz	Baseband	50 dB	75 sec (solid state)	
<b>CS65040F-R</b>	100 MHz	Baseband	50 dB	>120 min (stream from RAID)	
<b>CS65040F-RF</b>	120 MHz	2 MHz to 18 GHz	45 dB	75 sec (solid state)	
<b>CS65080F</b>	295 MHz	Baseband	50 dB	40 sec (solid state)	
<b>CS65080F-RF</b>	255 MHz	10 MHz to 18 GHz	45 dB	40 sec (solid state)	
<b>CS65150F</b>	500 MHz	Baseband	50 dB	20 sec (solid state)	
<b>CS65150F-RF</b>	400 MHz	10 MHz to 18 GHz	45 dB	20 sec (solid state)	
<b>CS65150FS</b>	500 MHz	Baseband	50 dB	20 sec (solid state)	
<b>CS65150FS-RF</b>	400 MHz	10 MHz to 18 GHz	45 dB	20 sec (solid state)	

Note: CS65150FS allows simultaneous record play operations.

#### BSAG Software Features

Frequency spectrum, multi-domain coherent modulation analysis, real-time with capture analysis, simultaneous parametric analysis, and parametric (chart) plotting and display

#### Software Analysis Modules

Banded channel power, PSK/QAM, ASK/OOK, FSK/MSK, AM/FM/PM/SSB, RADAR (Pulse), Radio Specific (Agile, PPT, SINGARS/DAMA, etc.), and coherent modulation domain (AM/FM/PM)

#### 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

#### 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, and powerful BSA control and analysis software.

#### Broadband Signal Analyzer and Generator Options

Data Memory	4 GB to 28 GB
RAID Storage or Input Streaming	250 GB to 2 TB
Downconverter Options	Tunable or fixed, Up to 40 GHz in bands
Sample Clock Option	Low phase noise
Input/Output Options	Precision programmable attenuators High speed attenuators Anti-aliasing filters High sensitivity
Multiple 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/Mixed Signal Options	RF, baseband, digital, I/Q
Remote Control Option	Software control via 100/1000baseT Ethernet
Data Input/Output Options	Broadband analog High speed digital (LVDS, DECL, PECL, TTL)

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