SignalCore™

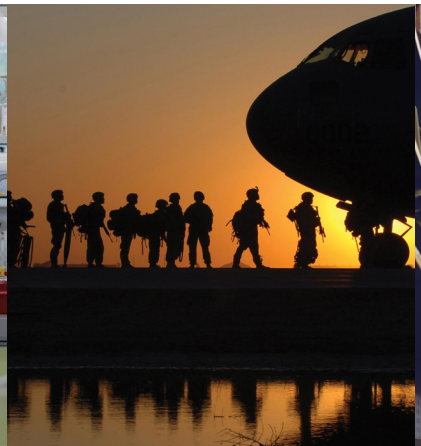
PRESERVING SIGNAL INTEGRITY

2018

Product Guide

Instrumentation Grade RF and Microwave Subsystems



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About Us

Founded in 2009, SignalCore, Inc. is a privately held company based in Austin, TX. SignalCore designs and manufactures high quality, instrument grade RF and microwave subsystems. We serve customers worldwide in the industries of measurement, communications, aerospace, defense, academia, and electronics manufacturing. Our extensive engineering knowledge and experience in the design and manufacturing of high performance RF and microwave solutions ensures that our products are of the highest quality and reliability in the industry.

“SignalCore provides high performance and flexible technology solutions. Our instrument grade RF and microwave subsystems are designed to meet today’s demanding applications.”

Made in the USA

All specifications are subject to change without notice. For the most updated specifications, visit our website.

Product Feature

SignalCore is excited to announce the latest specifications on its newest product, the 26.5 GHz RF Downconverter. For a complete data sheet, visit the product page on our website.

26.5 GHz RF Downconverter

USB-SPI-RS232

Input RF Range	6 GHz to 26.5 GHz
Gain Control	-40 to +40 dB typ
LO Phase Noise	-100 dBc/Hz @ 10 kHz, 10 GHz
Input IP3	+18 dBm typ
Noise FIgure	+10 dB @ max gain
Input P1dB	1 dB Compression typ

The SC5318A is a C to K band broadband single-stage downconverter, converting frequencies from 6 GHz to 26.5 GHz down to 50 MHz to 3 GHz. The LO frequency range is from 6 to 26.5 GHz with an input LO range from 6 to 14 GHz. An internal frequency doubler multiplies the input LO range up to 26.5 GHz. This module also features an internal 26.5 GHz synthesized LO, RF preamplifier, and variable gain control, making it a compact, standalone downconverter module.

This module can be combined with SignalCore's 6 GHz RF Downconverter to form a broadband 100 kHz to 26.5 GHz downconverter. These high-performance converter modules are compact and rugged, built for easy integration into large systems.

With the option for an external LO signal, the SC5318A may be configured for SISO applications, or paired together for MIMO applications such as ground-based satellite communications, point-to-point radio, and test instrument systems.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Satellite Communications | Point-to-Point Radio | Test Systems | Prototype Development

Signal Sources

SignalCore signal sources are designed to meet demanding RF and microwave applications in academia, military, and commercial markets. Our broadband CW signal sources offer low phase noise performance, fast frequency locking, and fine resolution tuning, all with robust and easy to use programming interfaces.

Best Seller

20 GHz Signal Source

PXIe / USB-SPI-RS232

Frequency Range	100 MHz to 20 GHz
Phase Noise	-118 dBc/Hz at 10 kHz offset, 10 GHz carrier
Tuning Resolution	1 Hz (exact frequency)
Output Levels	-30 dBm to +10 dBm
Spurious Signals	-70 dBc typical

Designed to meet demanding high-performance applications, the SC5510A and SC5511A pack the performance of a big-box instrument into a module that fits in the palm of your hand. In these signal sources, multiple phase-locked loop architectures are employed to produce low phase noise signals. These modules are ideal for both single-stage RF conversion systems and dual-stage image suppression up and down converter systems.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

RF Instrumentation | Wireless Communications | Signal Intelligence | Data Converters | Software-Defined Radio

10 GHz Signal Source

PXIe / USB-SPI-RS232

Frequency Range	50 MHz to 10 GHz
Phase Noise	-121 dBc/Hz at 10 kHz offset, 1 GHz carrier
Tuning Resolution	1 Hz (exact frequency)
Output Levels	-60 dBm to +10 dBm
Spurious Signals	-75 dBc typical
2nd order harmoncs	-20 dBc

These modules employ a multiple phase-locked loop architecture as well as a YIG oscillator as the heart of its synthesizer. Frequency accuracy is provided by an onboard 10 MHz temperature compensated crystal oscillator (TCXO). The SC5503B and SC5502A can be used as a standalone CW signal source or as an LO source for frequency conversion systems such as the SignalCore IQ modulators and demodulators.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Spectral Analysis | Wireless Communications | Broadcast Monitoring | Signal Intelligence | Software-Defined Radio

6 GHz Dual Channel Signal Source

PXIe / USB-SPI-RS232

Frequency Range	25 MHz to 6 GHz
Phase Noise	-115 dBc/Hz at 10 kHz offset, 1 GHz carrier
Tuning Resolution	1 Hz (exact frequency)
Output Levels	-50 dBm to +10 dBm
Spurious Signals	-75 dBc typical
Channel Isolation	> 70 dB

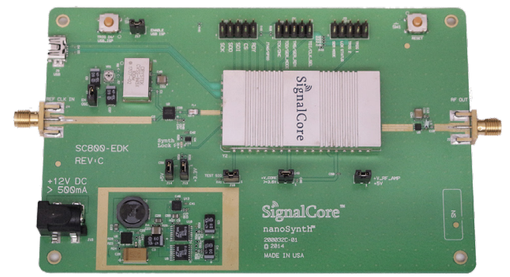
SignalCore's dual channel CW signal sources provide independent frequency generation from 25 MHz to 6 GHz. Both channels have a common internal 10 MHz TCXO reference, which can be phase locked to an external source for frequency synchronization. The SC5505A and SC5506A are designed with the intent of being paired up with SignalCore IQ modulators and demodulators to form RF transceivers. They serve well as LO sources for multiple single stage downconverters or a dual stage downconverter and are ideal choices as a clock source for fast DAC and ADC applications.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

RF Instrumentation | Wireless Communications | Signal Intelligence | Data Converters | Software-Defined Radio

nanoSynth®

Integrated 6 GHz SMT Synthesizer



Frequency Range	25 MHz to 6 GHz
Phase Noise	-112 dBc/Hz at 10 kHz offset, 1 GHz carrier
Tuning Resolution	1 Hz (exact frequency)
Spurious Signals	-65 dBc typical
2nd order harmoncs	-15 dBc typical

The SC800 nanoSynth® is a fully integrated broadband CW signal source combining multiple PLL, DDS, and frequency dividers into a rugged and miniature 2” x 1” surface mount package. This signal source integrates low noise linear regulators and an output RF amplifier to greatly improve the pushing and pulling performance. To simplify user communication with the device, an onboard mocroprocessor performs all necessary computations to control and set the output frequency, reducing the number and complexity of instruction registers.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Test and Measurement Equipment | Wireless Communication Equipment | Point-to-Point & Cellular Infrastructure

Frequency Converter Local Oscillator | Digital Data Converter Clock Source | Network Equipment

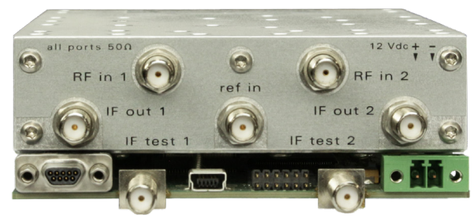
RF Downconverters

SignalCore's RF Downconverters feature the ability to lock to a precision external reference source, allowing for subsequent digitizing and signal processing. With low phase noise, fine tuning steps, and continuous broadband coverage, these modules provide customers with the tools they need for precise frequency translation.

Dual Channel

9.05- 9.55 GHz RF Downconverter

USB-SPI



Frequency Range	9.05 GHz to 9.55 GHz
Phase Noise	-106 dBc/Hz at 100 kHz offset
Noise Figure	4.8 dB typical
Input IP3	-13 dBm
LO Leakage	-100 dBm

The SC5360B is a dual channel, dual-stage conversion, super-heterodyne downconverter with integrated local oscillators (LOs). The module is designed as a subsystem component in customized precision test equipment [designs] and meets demanding applications such as X-band radar systems, communication systems, and spectral monitoring systems. The SC5360B is intended to ease the efforts of system engineers in creating embedded applications like signal intelligence or radar systems where the requirements demand high quality, compact RF modules.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Radar | Satellite | RF Instrumentation | Software-Defined Radio | Signal Intelligence

6 GHz RF Downconverter

PXIe / USB-SPI-RS232

Input RF Range	DC to 6 GHz
Phase Noise	-140 dBc/Hz @ 1 MHz offset, 1 GHz carrier
Input SNR Dynamic Range	150 dBc/Hz
Residual Spurs	-100 dB
Bandwidth	320 MHz

With this module, SignalCore offers a compact and modular, high-performance, triple stage heterodyne downconverter. Powered by a single rail +12V supply, the SC5308A uses a YIG oscillator as its tunable RF LO, contributing negligible noise to the downconverted RF signal. For PXI users, SIgnalCore offers a double slot PXI Pxpress platform that has the same performance and functionality as the stand alone core module.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

6 GHz Direct IQ Demodulator

PXIe / USB-SPI-RS232

Frequency Range	300 MHz to 6 GHz
Noise Floor	-165 dBm/Hz
Adjustable Gain	60 dB
Input IP3	20 dBm
Attenuation Range	0 to 60 dB

The SC5312A and SC5313A are 300 MHz to 6 GHz direct IQ demodulators, down converting RF directly to analog In-phase and Quadrature IF or IQ baseband. The DC coupled differential IQ pair may be fed to any dual channel digitizer for analog to digital data conversion. The local oscillator (LO) is supplied by an external source (such as the 6 GHz Dual Channel Signal Source) and its replica may be used to drive another direct IQ downconverter for coherent reception. These modules can also be configured together as an RF signal transceiver.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Triple Stage

3.9 GHz RF Downconverter

PXIe / USB-SPI-RS232

Input RF Range	1 MHz to 3.9 GHz
Image Rejection	120 dB
Phase Noise	-107 dBc/Hz @ 10 kHz offset, 1 GHz carrier
Input SNR Dynamic Range	150 dBc/Hz
Residual Spurs	-100 dB
Signal Bandwidth	10 / 20 / 40 MHz

The SC5305A and SC5306B are three-stage superheterodyne downconverters that deliver superior image rejection over single stage conversion. These products have both high signal-to-noise dynamic range and high spurious free dynamic range. This range is achieved by using low noise linear amplifiers, low loss mixers, and high performance solid state attenuators.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Satellite Communications | Point-to-Point Radio | Test Systems | Prototype Development

RF Upconverters

SignalCore RF Upconverters are designed to meet today's demanding wireless applications. They are high performance devices that can be easily integrated into many signal generation systems. They are well suited to pair up with our RF downconverters to form transceiver pairs.

Triple Stage

6 GHz RF Upconverter

PXIe / USB-SPI-RS232

Input RF Range	DC to 6 GHz
Phase Noise	-140 dBc/Hz @ 1 MHz offset, 1 GHz carrier
Output SNR Dynamic Range	150 dBc/Hz
Output Levels	-110 dBm to 15 dBm with 0 dBm at input
Bandwidth	320 MHz

The SC5407A and SC5408A use superheterodyne topology while exhibiting low phase noise, high dynamic range, excellent flatness response, and low spurious content. These modules are easily integrated with standard communication interfaces, and come with extensive Windows, LabVIEW, and C/C++ support, simplifying the task of building customized systems. Driver and development software is provided, as well as a software GUI that allows users to easily control the device wihtout having to write control software.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

RF System Integration | Wireless Communications | Signal Intelligence | Satellite Link | Software-Defined Radio

Direct IQ

6 GHz Direct IQ Modulator

PXIe / USB-SPI-RS232

Frequency Range	400 MHz to 6 GHz
Analog Baseband	DC to 160 MHz
Output SNR	140 dB
Output IMD	-70 dBc
Attenuation Range	0 to 90 dB

The SC5413A and SC5412A are 400 MHz to 6 GHz direct IQ modulators upconverting analog In-phase and Quadrature IF or IQ baseband directly to RF. Each module can also be operated as a single stage upconverter. The DC coupled differential IQ pair may be driven by any dual channel baseband source such as a dual channel arbitrary waveform generator. The local oscillator (LO) is supplied by an external source (such as the 6 GHz Dual Channel Signal Source), and its replica may be used to drive another direct IQ upconverter for coherent transmission.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

Wireless Communication Testing | Software-Defined Radio | Point-to-Point Radio | Multi-Channel Coherent Systems

Triple Stage

3.9 GHz RF Upconverter

PXIe / USB-SPI-RS232

Input RF Range	1 MHz to 3.9 GHz
Image Rejection	120 dB
Phase Noise	-107 dBc/Hz @ 10 kHz offset, 1 GHz carrier
Output SNR Dynamic Range	150 dBc/Hz
3rd order intermodulation	70 dBc at 0 dBm output level
Signal Bandwidth	20 / 40 MHz

As part of our commitment to offer products across multiple configurations, SignalCore offers a three-stage, high dynamic range, superheterodyne upconverter for PXI Express. Designed to convert low frequency broadband IF signals to higher RF signals, the SC5405A has 3rd order linearity and noise performance to rival direct conversion devices without the inherent image and in-band LO leakages. The SC5405A is highly configurable to suit the intended application and can be configured as a 1 MHz to 3.9 GHz sine-tone generator with an add-on feature. This product is also available as a standalone core module.

Full implementation instructions, GUI, driver software, and example code are provided with each module.

RF System Integration | RF Record and Playback | Wireless Communications Testing | Broadcast Monitoring

Quality Commitment

SignalCore is committed to quality and compliance worldwide in meeting customer expectations and developing high-quality products, through a well maintained quality management system. To demonstrate commitment to quality, SignalCore is ISO 9001:2015 certified and all products are manufactured to be fully RoHS compliant.

View our ISO 9001:2015 certificate.

For more information about our products, visit our website at www.signalcore.com. For more detailed questions, email us at sales@signalcore.com.

If you are experiencing technical difficulties with a product or need anwers to technical questions, email us at support@signalcore.com.

Made in the USA

2018

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