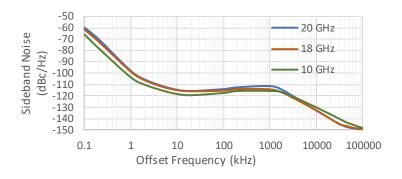
The SC5511A is a compact, performance VCO based synthesized signal source with frequency ranging from 100 MHz to 20 GHz. Despite its small modular form factor that fits into the palm of the hand, it packs the instrument grade performance of large box instruments. Boasting low phase noise of -137 dBc/Hz @ 10kHz offset from a 1 GHz carrier, tuning the entire band at 1 Hz resolution, and having amplitude step resolution of 0.01 dB over the range of < -25 dBm to +13 dBm sets the SC5511A apart from other small modular synthesizers. Furthermore, using a unique multiple phase-locked architecture the phase spurs are typically

20 GHz Signal Source Core Module





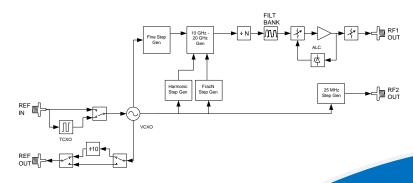
kept below -70 dBc across the tuning range, even at 1 Hz step resolution. Furthermore, using a high fundamental frequency VCO (20 GHz) and eliminating multipliers, sub-harmonics due to dividers are typically less than -70 dBc and far out spurious signals are also kept below -70 dBc.

The SC5511A has an additional independent RF2 channel whose frequency range covers 100 MHz to 3 GHz with tuning resolution of 25 MHz. This makes the module ideal for both single-stage RF conversion systems, and dual-stage image suppression up/down converter systems. It makes a great general purpose laboratory signal source where demanding size, low phase noise, and signal purity are needed. It is also an ideal choice as an integrated clock source for fast DAC and ADC applications, especially those that require variable sampling rates.

Product Features

- Low residual phase noise typically -137 dBc/Hz at 10 kHz, 1 GHz
- 100 MHz to 20 GHz output range
- 1 Hz tuning resolution (exact frequency)
- < -25 dBm to +13 dBm leveled output
- Spurious signals <-70 dBc typical
- Dual independent channels

Simplified Functional Diagram



Applications

- RF instrumentation
- Wireless communications
- Signal intelligence



SC5511A SPECIFICATIONS

TECHNICAL SPECIFICATIONS (AT 25°C AMBIENT, SINE WAVEFORM)

RF1 SPECTRAL SPECIFICATIONS

RF output frequency range 100 MHz to 20 GHz
Internal reference
Stability ¹ ±200 ppb
Aging < 1 ppm after 1 year
Phase locking range ±5 ppm
Tuning
Resolution 1 Hz
Speed (settled to 1 ppm) ² < 500 us
Sideband phase noise ³ (dBc/Hz)

	RF Frequency							
Offset	1 GHz		5 GHz		10 GHz		20 GHz	
	typ	max	typ	max	typ	max	typ	max
100 Hz	-100	-94	-86	-80	-80	-70	-74	-64
1 kHz	-123	-117	-109	-91	-103	-97	-97	-91
10 kHz	-137	-131	-123	-118	-117	-112	-111	-106
100 kHz	-137	-131	-123	-118	-117	-112	-111	-106
1 MHz	-137	-131	-123	-118	-117	-112	-111	-106
10 MHz	-150	-147	-139	-135	-133	-130	-131	-130
Floor	-153	-149	-150	-147	-147	-145	-145	-145

Spurious Signals

< 10 MHz offset

Typical	65 dBc
max	55 dBc
> 10 MHz offset	
typical	75 dBc
may	70 dBc

RF1 AMPLITUDE **S**PECIFICATIONS

Output range 4,5	-25 dBm to +13 dBm
Max output	> +15 dBm typical
Amplitude resolution	0.01 dB
2nd order harmonics (0 dBm)	< -20 dBc
Sub-harmonics	< 70 dBc typical
Output level accuracy 5	< ±1.0 dB typical

RF2 SPECIFICATIONS

Frequency step resolution	25 MHz
Power output	5 dBm typical
2 nd order harmonics (0 dBm)	< -15 dBc
Phase Noise @ 1 GHz	
1 kHz	110 dBc/Hz
10 kHz	118 dBc/Hz
100 kHz	118 dBc/Hz
1 MHz	142 dBc/Hz
10 MHz	160 dBc/Hz

RF range 100 MHz to 3 GHz

TERMINAL SPECIFICATIONS

RF output t	erminals	
Ir	npedance	50 Ω
	connector type	
C	oupling	AC
Reference i	input terminal	
Ir	npedance	50 Ω
C	connector type	SMA female
C	oupling	AC
F	requency	10 MHz
Α	mplitude range	. 0 dBm to +13 dBm
L	ock range	±5 ppm
Reference of	output terminal	
Ir	npedance	50 Ω
C	connector type	SMA female
C	oupling	AC
F	requency	10/100 MHz
Α	mplitude	+3 dBm typ

ENVIRONMENTAL

Operating temperature ⁶	10 °C to +55 °C
Operating relative humidity	10% to 90%, non-condensing
Operating shock30g,	half-sine pulse, 11 ms duration
Operating vibration	5 Hz to 500 Hz, 0.31 g _{rms}
Altitude 2000 m max (maintainir	ng 25 °C ambient temperature)

General Specifications

Power consumption +12 V @ 1.6 A
Weight
Dimensions (W x H x D, max envelope) 0.75" x 3.75" x 5.75"
Warranty 3 years parts and labor on
defects in materials or workmanship

ORDER INFORMATION

7100045-01	SC5511A, 20 GHz Signal Source
	USB and SPI Interfaces
7100045-02	SC5511A, 20 GHz Signal Source
	USB and RS-232 Interfaces

Specifications are subject to change without notice. For the most recent product $% \left(1\right) =\left(1\right) \left(1\right)$ specifications, please visit www.signalcore.com.

- Internal reference is a TCXO. For better accuracies and stability SignalCore recommends phase-locking to a precision external
- For step change of less than 100 MHz and only when automatic level adjustment is turned off.
- Specified for channel RF 1 at power levels of greater than 0 dBm.
- Output leveled range is typically -30 dBm to +13 dBm for frequencies < 18 GHz. The leveled range is typically -30 dBm to + 10 dBm for frequencies >18 GHz. ALC closed. Output levels < -25 dBm may degrade to ± 3.0 dB typical at some
- frequencies and not guaranteed.
- User must provide cooling to maintain internal device temperatures of 0 $^{\circ}$ C to 75 $^{\circ}$ C.