

# SC5505A

## 6 GHz Dual Channel Signal Source for PXI Express

The SC5505A is single slot, 3U, PXI Express 6 GHz dual channel CW signal source. The two channels provide independent frequency generation from 25 MHz to 6 GHz in frequency steps of 1 Hz. Both channels have a common internal 10 MHz TCXO reference, which can be phase locked to an external source for frequency synchronization.

The SC5505A has very low phase noise of better than -115 dBc/Hz at 10 kHz offset from a 1 GHz carrier. Using a unique multiple phase-locked loop architecture, phase spurs are kept below -70 dBc across the tuning range, even at 1 Hz step resolution. Harmonics are typically less than 30 dBc, and spurious signals are kept below -70 dBc. Channel-to-channel isolation is better than 70 dB.

The SC5505A is designed with the intent of being paired with SignalCore IQ modulators and demodulators such as the SC5412A and SC5312A respectively, to form RF transceivers. It also serves well as LO sources for multiple single stage downconverters or a dual stage downconverter. Due to its low spurious content and low phase noise, it is an ideal choice as a clock source for fast DAC and ADC applications, especially those that require variable sampling rates. Its compact size and instrument grade performance make the SC5505A an ideal RF source for many modern applications including wireless test, radar, digital clocking, instrumentation, academic research, and defense.



### Product Features

- Low residual phase noise better than -115 dBc/Hz at 10 kHz offset, -140 dBc/Hz at 1 MHz offset, measured on 1 GHz carrier
- Low phase spurious content < -70 dBc
- 25 MHz to 6 GHz output range
- 1 Hz tuning resolution (exact frequency)
- < -50 dBm to +10 dBm leveled output
- Spurious signals < -70 dBc typical
- Channel isolation > 70 dB
- Automatic level control

# SC5505A SPECIFICATIONS

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

### SPECTRAL SPECIFICATIONS

RF output frequency range <sup>1</sup> ..... 25 MHz to 6 GHz  
 Internal reference  
     Stability <sup>2</sup> ..... ±2.5 ppm  
     Aging ..... < 1 ppm after 1 year  
     Phase locking range ..... ±5 ppm  
 Tuning  
     Resolution ..... 1 Hz  
     Speed (settled to .1 ppm) <sup>3</sup> ..... < 500 us  
 Sideband phase noise (dBc/Hz)

Offset	RF Frequency			
	100	1 GHz	3 GHz	6 GHz
100 Hz	-107	-87	-85	-83
1 kHz	-119	-99	-98	-97
10 kHz	-135	-115	-110	-105
100	-136	-116	-111	-106
1 MHz	-150	-140	-130	-124
10 MHz	-150	-150	-149	-147

Sideband phase spurious signals  
     < 100 kHz ..... -65 dBc typical  
     > 100 kHz ..... -70 dBc typical

### AMPLITUDE SPECIFICATIONS

Output RF range ..... -50 dBm to +10 dBm  
 Max output level ..... +16 dBm typical  
 Amplitude resolution ..... 0.1 dB  
 2<sup>nd</sup> order harmonics (0 dBm) <sup>4</sup> ..... < -30 dBc  
 Output level accuracy  
     > -30 dBm to +10 dBm ..... < ±0.5 dB  
     < -30 dBm ..... < ±0.75 dB

Impedance ..... 50 Ω  
 Connector type ..... SMA female  
 Coupling ..... AC  
 Reference input terminal  
     Impedance (single ended) ..... 50 Ω  
     Connector type ..... SMA female  
     Coupling ..... AC  
     Frequency ..... 10 MHz  
     Amplitude range ..... -5 dBm to +10 dBm  
     Lock range ..... ±5 ppm  
 Reference output terminal  
     Impedance (single ended) ..... 50 Ω  
     Connector type ..... SMA female  
     Coupling ..... AC  
     Frequency ..... 10 MHz  
     Amplitude ..... +3 dBm  
 Communication interface ..... PXI Express  
 Power consumption ..... +12 V @ 1.5 A  
     +3.3 V @ 0.2 A  
 Weight ..... 1 lb  
 Dimensions (W x H x D, max envelope) 0.8" x 5.1" x 7.2"  
 Warranty ..... 3 years parts and labor on defects in materials or workmanship

### ORDER INFORMATION

7100035-01 ..... SC5505A, 6 GHz Dual Channel Signal Source for PXI Express

Specifications are subject to change without notice. For the most recent product specifications, please visit [www.signalcore.com](http://www.signalcore.com).

- (1) Typically tunable from 23.5 MHz to 6150 MHz
- (2) Internal reference is a TCXO. For better accuracies and stability SignalCore recommends phase-locking to a precision external source
- (3) For step change of less than 100 MHz
- (4) Harmonic levels are specified for frequencies greater than 350 MHz. At lower RF frequencies the harmonic levels could be as high as -12 dBc.

### TERMINAL SPECIFICATIONS

LO output terminals