

Signal Hound®



Product Catalog

signalhound.com

The Signal Hound Difference



UNRIVALED VALUE IN RF TEST & MEASUREMENT EQUIPMENT



MADE IN THE USA



IN-STOCK, NEXT DAY SHIPPING



30-DAY MONEY-BACK GUARANTEE



INDUSTRY-BEST 2 YEAR WARRANTY STANDARD



**PREMIUM ACCESSIBLE PRODUCTS
ACROSS LOW, MID & HIGH FREQUENCIES**



PROUDLY VETERAN OWNED

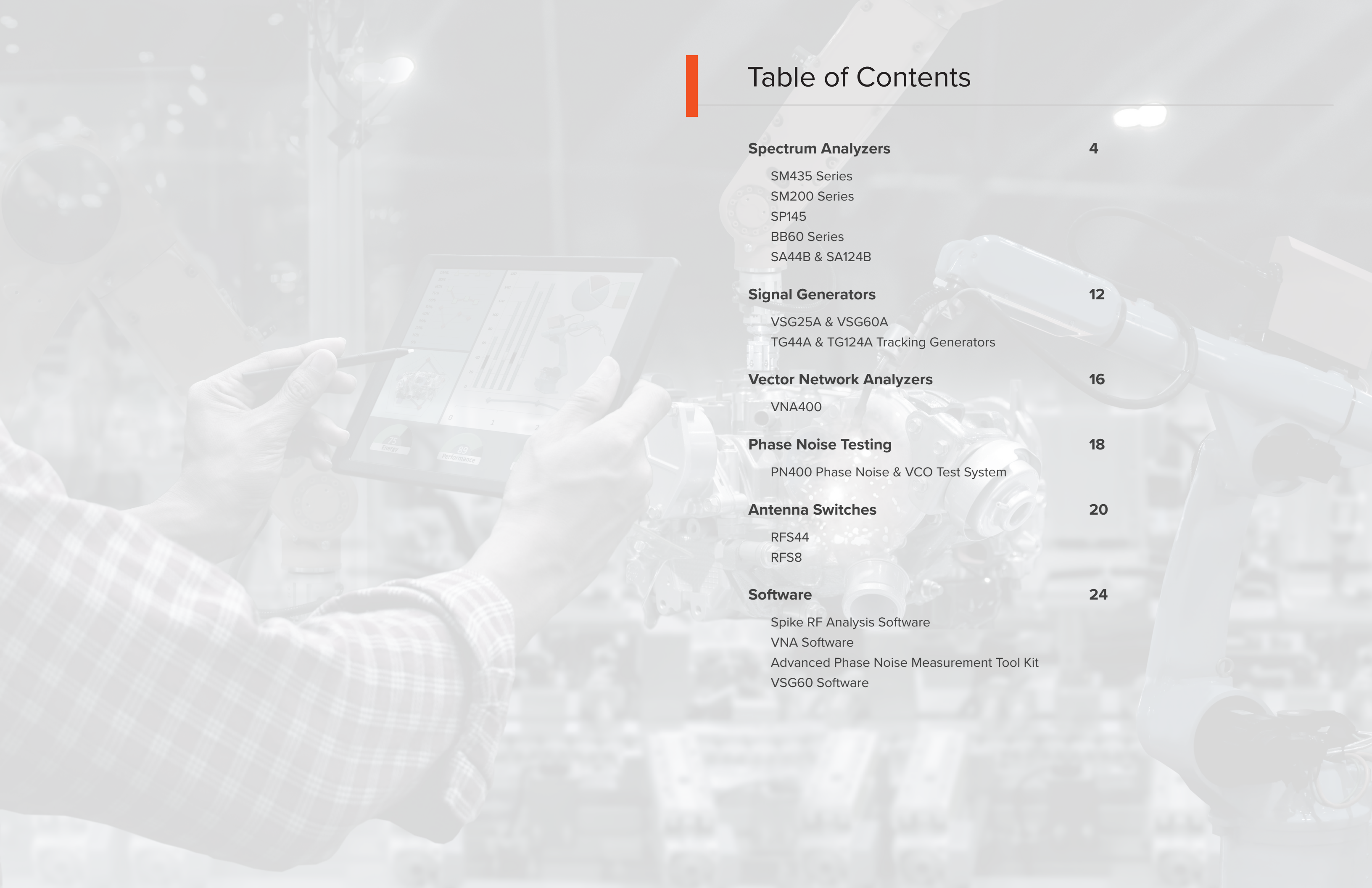


Table of Contents

Spectrum Analyzers	4
SM435 Series	
SM200 Series	
SP145	
BB60 Series	
SA44B & SA124B	
Signal Generators	12
VSG25A & VSG60A	
TG44A & TG124A Tracking Generators	
Vector Network Analyzers	16
VNA400	
Phase Noise Testing	18
PN400 Phase Noise & VCO Test System	
Antenna Switches	20
RFS44	
RFS8	
Software	24
Spike RF Analysis Software	
VNA Software	
Advanced Phase Noise Measurement Tool Kit	
VSG60 Software	

Spectrum ANALYZERS

Signal Hound spectrum analyzers were created for a very specific purpose: to provide high-quality RF spectrum analysis tools at a price that makes them accessible to most engineers and technicians.

Whether you require mmWave analysis, remote monitoring capabilities, or portable form factors for work in the field, Signal Hound has a spectrum analyzer to meet your needs.

HIGH-FREQUENCY / MID-FREQUENCY / LOW-FREQUENCY

	FREQUENCY RANGE	
	SM435B	100 kHz to 43.5 GHz
	SM435C	100 kHz to 43.5 GHz
	SM200B	100 kHz to 20 GHz
	SM200C	100 kHz to 20 GHz
	SP145	100 kHz to 14.5 GHz
	BB60D	9 kHz to 6.0 GHz
	BB60C	9 kHz to 6.0 GHz
	USB-SA44B	1 Hz to 4.4 GHz
	USB-SA124B	100 kHz to 12.4 GHz

SM435 Series

Signal Hound’s SM435 series of spectrum analyzers and monitoring receivers is designed for accurate and affordable RF data analysis up to 43.5 GHz. These high-performance analyzers have 160 MHz of instantaneous bandwidth (IBW), 110 dB of dynamic range, 1 THz/sec sweep speed at 30 kHz RBW (using Nuttall windowing), and phase noise performance that is low enough to contribute less than 0.1% error to EVM measurements and rival even the most expensive spectrum analyzers on the market.

The SM435C offers a 10 Gigabit Ethernet SFP+ port, enabling the SM435C to communicate with a PC over long distances using a fiber optic cable, making it ideal for remote spectrum monitoring applications.

				
	SM435B		SM435C	
FREQUENCY RANGE	100 kHz to 43.5 GHz		100 kHz to 43.5 GHz	
SWEEP SPEED	SPEED	RBW	SPEED	RBW
	1 THz/sec	≥ 30 kHz	1 THz/sec	≥ 30 kHz
	160 GHz/sec	10 kHz	160 GHz/sec	10 kHz
	18 GHz/sec	1 kHz	18 GHz/sec	1 kHz
SSB PHASE NOISE AT 1 GHz CENTER FREQUENCY	OFFSET FREQUENCY	dBc / Hz	OFFSET FREQUENCY	dBc / Hz
	10 Hz	-76	10 Hz	-76
	100 Hz	-108	100 Hz	-108
	1 kHz	-125	1 kHz	-125
	10 kHz	-136	10 kHz	-136
	100 kHz	-138	100 kHz	-138
	1 MHz	-138	1 MHz	-138
SUB-OCTAVE PRESELECTOR FILTERS	20 MHz to 43.5 GHz		20 MHz to 43.5 GHz	
I/Q ACQUISITION MODES	Calibrated Streaming I/Q: Up to 40 MHz of selectable I/Q streaming bandwidth. Up to 2 seconds of calibrated I/Q capture at 160 MHz bandwidth.		Calibrated Streaming I/Q: Up to 160 MHz of selectable I/Q streaming bandwidth.	

SM200 Series

These high-performance spectrum analyzers and monitoring receivers from Signal Hound offer tuning from 100 kHz to 20 GHz and ultra-fast sweep speeds (1 THz/sec 30 kHz RBW using Nuttall windowing). The analyzers showcase excellent IP3, DANL, phase noise and SFDR for improved selectivity, allowing the SM200 series to bring clarity to crowded spectrums.

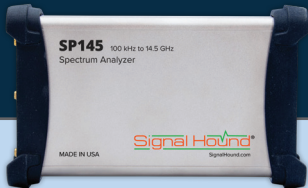
The SM200C uses an SFP+ port for fast, long-distance communication with a PC using an optic cable. Device control and data transfer occurs via SFP+ connection, not USB.

				
	SM200B		SM200C	
FREQUENCY RANGE	100 kHz to 20 GHz		100 kHz to 20 GHz	
SWEEP SPEED	SPEED	RBW	SPEED	RBW
	1 THz/sec	≥ 30 kHz	1 THz/sec	≥ 30 kHz
	160 GHz/sec	10 kHz	160 GHz/sec	10 kHz
	18 GHz/sec	1 kHz	18 GHz/sec	1 kHz
DISPLAY AVERAGE NOISE LEVEL (DANL) REF LEVEL ≤ -20 dBm	INPUT FREQUENCY RANGE	dBm / Hz	INPUT FREQUENCY RANGE	dBm / Hz
	100 kHz to 700 MHz	-156 dBm	100 kHz to 700 MHz	-156 dBm
	700 MHz to 2.7 GHz	-160 dBm	700 MHz to 2.7 GHz	-160 dBm
	2.7 GHz to 4.5 GHz	-158 dBm	2.7 GHz to 4.5 GHz	-158 dBm
	4.5 GHz to 8.5 GHz	-153 dBm	4.5 GHz to 8.5 GHz	-153 dBm
	8.5 GHz to 15 GHz	-154 dBm	8.5 GHz to 15 GHz	-154 dBm
	15 GHz to 20 GHz	-151 dBm	15 GHz to 20 GHz	-151 dBm
I/Q ACQUISITION MODES	Calibrated Streaming I/Q: Up to 40 MHz of selectable I/Q streaming bandwidth. Up to 2 seconds of calibrated I/Q capture at 160 MHz bandwidth.		Calibrated Streaming I/Q: Up to 160 MHz of selectable I/Q streaming bandwidth.	
SYNCHRONIZATION	External trigger, GPIO, Internal GPS (± 40ns)		External trigger, GPIO, Internal GPS (± 40ns)	

SP145

The SP145 is a mid-range 14.5 GHz real-time spectrum analyzer and monitoring receiver featuring sweep speeds up to 200 GHz/sec, 40 MHz streaming bandwidth, and -160 dBm displayed noise average. This impressive product includes an internal GPS, adding a critical dimension of spectrum analysis when out in the field. The SP145 is USB-C powered for fast and accurate RF data acquisition in a continuously changing environment.

The SP145 was developed based on customer demand for a mid-range powerful, yet portable real-time spectrum analyzer for use in the field.



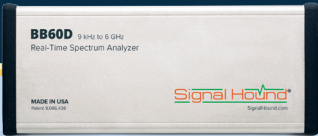
	SP145	
FREQUENCY RANGE	100 kHz to 14.5 GHz	
SWEEP SPEED	SPEED	RBW
	200 GHz/sec	≥ 70 kHz
	135 GHz/sec	30 kHz
	90 GHz/sec	10 kHz
	36 GHz/sec	3 kHz
	13.5 GHz/sec	1 kHz
TIMEBASE ACCURACY	± 1 ppb when locked to GPS	
SYNCHRONIZATION	External trigger, GPIO, Internal GPS (± 40ns)	
I/Q ACQUISITION MODES	Calibrated Streaming I/Q: Up to 40 MHz of selectable I/Q streaming bandwidth.	

BB60 Series

A high-speed, 6 GHz, real-time spectrum analyzer and RF recorder, the BB60 series is capable of streaming 140 MB/sec of digitized RF to your PC over USB 3.0, providing an instantaneous bandwidth of 27 MHz, and sweeping at speeds of 24 GHz/sec.

Signal analysis with the BB60 series in a congested environment makes easy work of identifying targeted weak signals in the presence of strong nearby signals. With a -30 dBm reference level, you can see all the way down to DANL. The ultra-small form factor of the BB60D (dimensions: 8.63" x 3.19" x 1.19" / weight: 1.10 lb) makes it ideal for RF analysis in the field.

The BB60D includes the same performant features of the popular BB60C but offers 10 dB more dynamic range and preselector filters from 130 MHz to 6 GHz. Add a high-speed hard drive to your PC or laptop (250 MB/s sustained write speed), and the BB60D doubles as an RF recorder, streaming up to 80 million IF samples per second, or 40 million I/Q samples to disk.

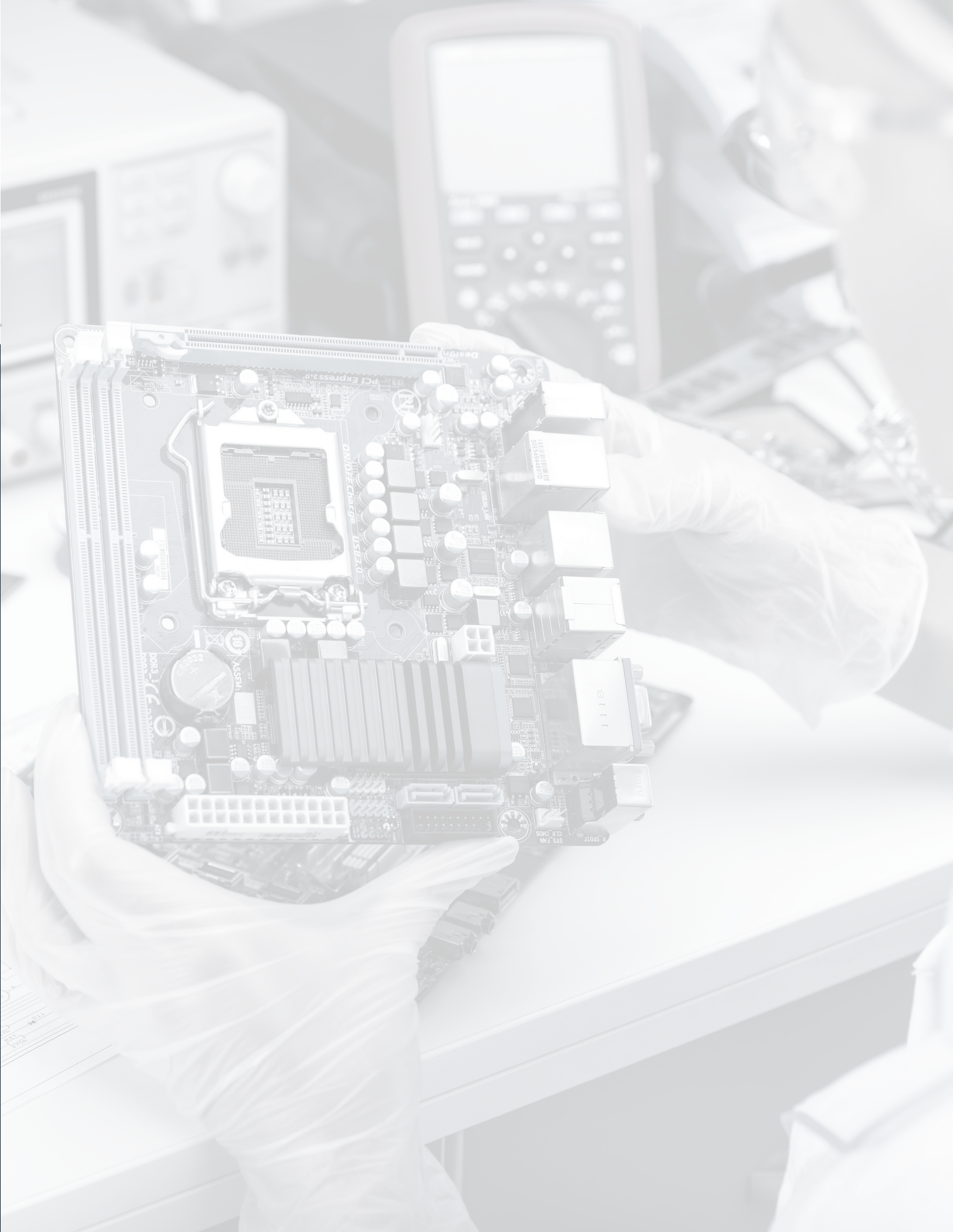


	BB60C	BB60D
FREQUENCY RANGE	9 kHz to 6.0 GHz	9 kHz to 6.0 GHz
SWEEP SPEED	24 GHz/sec	24 GHz/sec
SUB-OCTAVE PRESELECTOR	No Preselector	130 MHz to 6 GHz
PHASE NOISE AT 1 GHz CENTER FREQUENCY	OFFSET FREQUENCY	dBc / Hz
	100 Hz	-70
	1 kHz	-76
	10 kHz	-83
	100 kHz	-93
	1 MHz	-117
I/Q ACQUISITION MODES	OFFSET FREQUENCY	dBc / Hz
	100 Hz	-80
	1 kHz	-90
	10 kHz	-93
	100 kHz	-97
	1 MHz	-117
I/Q ACQUISITION MODES	Calibrated Streaming I/Q: Up to 27 MHz of selectable I/Q streaming bandwidth.	Calibrated Streaming I/Q: Up to 27 MHz of selectable I/Q streaming bandwidth.

SA44B & SA124B

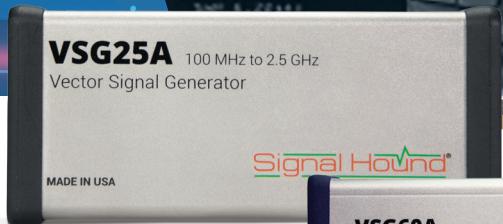
Signal Hound’s SA44B and SA124B are Software Defined Radios (SDRs) optimized as spectrum analyzers. They are compact, simple to use, and an effective troubleshooting tool for general lab use, engineering students, ham radio enthusiasts, and electronics hobbyists. Using innovations in RF technology, these products have the sensitivity, accuracy and dynamic range you’d expect in units many times the cost.

		
	SA44B	SA124B
FREQUENCY RANGE	1 Hz to 4.4 GHz	
RESOLUTION BANDWIDTH	0.1 Hz to 250 kHz and 5 MHz	
DISPLAY AVERAGE NOISE LEVEL (DANL) REF LEVEL ≤ - 20 dBm	INPUT FREQUENCY RANGE	dBm / Hz
	10 Hz	-124 dBm
	100 Hz to 10 kHz	-135 dBm
	10 kHz to 500 kHz	-142 dBm
	500 kHz to 10 MHz	-142 dBm
	10 MHz to 100 MHz	-148 dBm
	100 MHz to 1 GHz	-144 dBm
	1 GHz to 2.6 GHz	-139 dBm
	2.6 GHz to 3.3 GHz	-135 dBm
	3.3 GHz to 4.4 GHz	-128 dBm
	INPUT FREQUENCY RANGE	dBm / Hz
	100 kHz to 10 MHz	-147 dBm
	10 MHz to 100 MHz	-151 dBm
	100 MHz to 3 GHz	-152 dBm
	3 GHz to 5.5 GHz	-145 dBm
	5.5 GHz to 7 GHz	-149 dBm
	7 GHz to 8 GHz	-147 dBm
	8 GHz to 11 GHz	-134 dBm
	11 GHz to 12.4 GHz	-129 dBm



Signal
GENERATORS

Test engineers often value having a transmitter that can simulate different wireless standards to test their designs. Signal Hound's portfolio of signal generators offers unrivaled value with the performance needed to evaluate most designs. These reliable tools generate accurate signals that can be used with confidence to challenge your receivers.



VSG25A & VSG60A

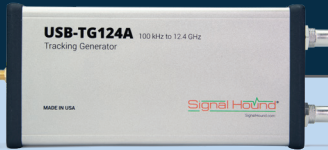
Signal Hound's VSG25A and VSG60A are reliable and ultra-portable vector signal generators for general purpose RF signal generation and test and measurement applications.

The VSG60A is a 6 GHz vector signal generator with 40 MHz of real-time streaming bandwidth and a powerful software suite. It features an agile, low phase noise LO synthesizer, digital baseband oversampling with reconstruction filter, harmonic filters across the full frequency range, and a trigger output, timed to match the RF output, for integrating the VSG60A into automated test environments.

	VSG25A VSG25A 100 MHz to 2.5 GHz Vector Signal Generator	VSG60A VSG60A 50 MHz to 6 GHz Vector Signal Generator
FREQUENCY RANGE	100 MHz to 2.5 GHz (useable down to 80 MHz)	50 MHz to 6 GHz
FREQUENCY RESOLUTION	< 1 Hz	< 1 Hz
STREAMING MODULATION BANDWIDTH	100 MHz	40 MHz
ARBITRARY I/Q SAMPLE RATES	54 kHz to 180 MHz	12.5 kSPS to 51 MSPS
I/Q PATTERN BUFFER SIZE	2 k	Unlimited
FREQUENCY SWITCH TIME	< 1 sec	Queued Frequency Step Time: 200 µs

TG44A & TG124A Tracking Generators

The TG44A and TG124A are Signal Hound’s family of tracking generators which work with your SA124B to measure filters, attenuators, amplifiers and more! They are compact, simple to use, and an effective troubleshooting and analysis tool in the lab or in the field. Whether you are an amateur radio enthusiast or a microwave communications professional, the TG44A and TG124A provide fast, accurate results.

	 TG44A	 TG124A
FREQUENCY RANGE	10 Hz to 4.4 GHz	100 kHz to 12.4 GHz
FREQUENCY ACCURACY	± 1 ppm	± 1 ppm
AMPLITUDE RANGE	-30 dBm to -10 dBm	-30 dBm to -12 dBm
ABSOLUTE AMPLITUDE ACCURACY	± 2.0 db	± 2.0 db

Vector Network ANALYZERS

Signal Hound vector network analyzers follow the same principle as our spectrum analyzers: to provide high-quality test and measurement tools at a price that makes them accessible to most engineers and technicians. Engineers in the research and development phase, manufacturing professionals needing verification of components or systems, or technicians in the field, will all find Signal Hound’s vector network analyzers fit your application.



VNA400

Signal Hound’s VNA400 is a high-performance, USB-powered, 40 GHz, two port, vector network analyzer. Advancements in mmWave technology make the VNA400 a must have for RF industry professionals. With a wide frequency range of 40 MHz to 40 GHz, sub-Hz resolution, +/- 1 ppm internal TCXO accuracy and a sweep speed of 2000 points per second at 30 kHz RBW, the VNA400 is a perfect analysis tool whether you are in the lab or out in the field.

The VNA400 is optimized for testing two-port devices, such as filters, amplifiers, and attenuators, as well as one port devices like antennas or VSWR testing. It is powered from a Thunderbolt 3/4 port or USB-C port rated at 15 watts or higher and draws less than 15 watts. This powerful vector network analyzer can be used to make linear S-parameter measurements on a variety of devices, from amplifiers with up to 30 dB of gain, to attenuators or isolation testing of 120 dB or more. The VNA400’s combination of fast measurements at high dynamic range are useful for antenna pattern testing and filter adjustments.



	VNA400
FREQUENCY RANGE	40 MHz to 40 GHz
DYNAMIC RANGE AT BW (TYP) 100 Hz BW ISOLATION OFF MAX POWER TO NOISE FLOOR	-132 dB from 100 MHz to 2 GHz -125 dB from 2 GHz to 8 GHz -117 dB from 10 GHz to 32 GHz -110 dB up to 40 GHz
FREQUENCY ACCURACY	± 1 ppm

Phase Noise
TESTING

Signal Hound brings a revolutionary solution to phase noise and VCO testing. Utilizing cross-correlation methodology and feature-rich software, this process offers a level of performance and sensitivity beyond the capabilities of a single spectrum analyzer. This phase noise test solution is incredibly versatile, and can easily replace larger, more costly dedicated phase noise testers in the lab for applications such as phase noise testing and characterization, VCO testing and characterization, production and manufacturing testing, source characterization, system level debug and SDR characterization.

The introduction of the PN400 Phase Noise Test Tool Kit via Signal Hound’s powerful Spike™ spectrum analysis software brings a comprehensive suite of tools to this new test solution.

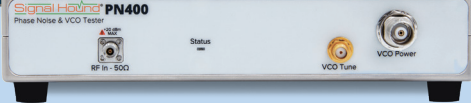


PN400 Phase Noise & VCO Test System

The PN400 is a unique and innovative phase noise test solution that incorporates the PN400 hardware with an PN400 Phase Noise Test Tool Kit and requires two Signal Hound SM-series spectrum analyzers and licensed software for operation. Combining the PN400 with two SM200 or SM435 spectrum analyzers enables cross-correlated phase noise measurements, VCO characterization via low noise tuning and supply voltage, and all the power and flexibility of Signal Hound’s spectrum analysis capabilities.

Combined with the PN400 hardware, the new VCO characterization mode in Spike’s licensed PN400 Phase Noise Test Tool Kit enables automatic sweeps across a configurable VCO tuning range. Accurate and low noise voltage sources combined with easy-to-use software support efficient characterization for R&D and manufacturing lines. The features go even further. Configurable automation, measurement of phase noise and amplitude noise (or a combination of both), and automatic signal detection are just a few of the valuable capabilities included in the tool kit.



	PN400 Phase Noise & VCO Test System 																																													
FREQUENCY RANGE	100 kHz to 43.5 GHz																																													
INPUT POWER LEVEL (TYP)	+10 dBm typical for the PN400 <i>(see product manual for more details)</i>																																													
PHASE NOISE FLOOR AT CENTER FREQUENCY (dBc/Hz) (TYP. MAX. CORRELATIONS)	<table><tr><th></th><th colspan="4">CENTER FREQUENCY</th></tr><tr><td>Offset</td><td>100 MHz</td><td>1 GHz</td><td>10 GHz</td><td>40 GHz</td></tr><tr><td>10 Hz</td><td>-108</td><td>-96</td><td>-76</td><td>-65</td></tr><tr><td>100 Hz</td><td>-145</td><td>-126</td><td>-106</td><td>-95</td></tr><tr><td>1 kHz</td><td>-160</td><td>-150</td><td>-130</td><td>-118</td></tr><tr><td>10 kHz</td><td>-167</td><td>-164</td><td>-144</td><td>-131</td></tr><tr><td>100 kHz</td><td>-173</td><td>-169</td><td>-151</td><td>-140</td></tr><tr><td>1 MHz</td><td>-176</td><td>-174</td><td>-155</td><td>-143</td></tr><tr><td>10 MHz</td><td>-178</td><td>-178</td><td>-173</td><td>-161</td></tr></table>		CENTER FREQUENCY				Offset	100 MHz	1 GHz	10 GHz	40 GHz	10 Hz	-108	-96	-76	-65	100 Hz	-145	-126	-106	-95	1 kHz	-160	-150	-130	-118	10 kHz	-167	-164	-144	-131	100 kHz	-173	-169	-151	-140	1 MHz	-176	-174	-155	-143	10 MHz	-178	-178	-173	-161
	CENTER FREQUENCY																																													
Offset	100 MHz	1 GHz	10 GHz	40 GHz																																										
10 Hz	-108	-96	-76	-65																																										
100 Hz	-145	-126	-106	-95																																										
1 kHz	-160	-150	-130	-118																																										
10 kHz	-167	-164	-144	-131																																										
100 kHz	-173	-169	-151	-140																																										
1 MHz	-176	-174	-155	-143																																										
10 MHz	-178	-178	-173	-161																																										

Antenna SWITCHES

Signal Hound’s antenna switches apply our innovative approach to high-performance test and measurement equipment to utility switching control. Utilizing advanced RF architecture design and silicon-on-insulator (SOI) technology, in unison with high quality components, our antenna switches give users vital features and enable concise data acquisition when switching across varied frequencies in diverse RF environments.



RFS44

The RFS44 is a single-pole four-throw (SP4T) absorptive solid-state switch using silicon-on-insulator (SOI) technology providing RF switching across four ports at up to 44 GHz. Switch from LF all the way through the Ka band and utilize this versatile tool in psuedo-doppler direction finding applications. With blazing fast switch speed, 3 ns rise/fall times, and direct access from Spike™, the RFS44 enables multi-band sweeping and direction finding to the SM435 product line!



	RFS44			
	MINIMUM	TYPICAL	MAXIMUM	UNITS
FREQUENCY	0.0001		44	GHz
IMPEDANCE		50		Ohms
VSWR RFin		<2.0:1		
VSWR RFC		<3.0:1		
ISOLATION		>28		dB
INPUT POWER > 100 MHz			20	dBm
INPUT POWER < 100 MHz			10	dBm
RISE/FALL TIMES (10% / 90%)		100		ns
DB15 ON/OFF		20		ns
UART ON/OFF		20		ns
USB ON/OFF		20		ms
ESD (HBM)	375			V
VIN RF1 - RF4	-16		16	V
VIN, RFC	-0.2		0.2	V

RFS8

The RFS8 is an advanced single-pole eight-throw (SP8T) absorptive solid-state switch utilizing silicon-on-insulator (SOI) technology, designed for RF switching across eight ports up to 8 GHz. This versatile device supports switching from the LF band through to 8 GHz, making it ideal for pseudo-doppler direction finding applications. Its extremely fast switch speeds, with 100 ns rise/fall times and direct access from Spike, facilitate efficient multi-band sweeping and direction finding with the BB60D and SP145 spectrum analyzers.



	RFS8			
	MINIMUM	TYPICAL	MAXIMUM	UNITS
FREQUENCY	0.0001		8	GHz
IMPEDANCE		50		Ohms
VSWR RFin		<2.0:1		
VSWR RFC		<2.0:1		
ISOLATION		>30		dB
INPUT POWER			20	dBm
RISE/FALL TIMES (10% / 90%)		100		ns
DB15 ON/OFF		230		ns
UART ON/OFF		20		µs
USB ON/OFF		20		ms
ESD (HBM)	1000			V
VIN RF1 - RF4	-16		16	V
VIN, RFC	-0.2		0.2	V

SOFTWARE

Spike RF Analysis Software



Spike is Signal Hound's spectrum analyzer software, compatible with the entire line of Signal Hound spectrum analyzers and tracking generators. Providing full device control, a configurable spectrogram display and user interface, and a variety of analysis modes, Spike is the perfect application for powerful and affordable RF analysis.

Features include:

- LTE analysis mode
- Real-time spectrum analysis
- 802.11b/a/n/ac/ax WLAN modulation analysis
- RF mapping for drive and walk test solutions
- EMC precompliance measurements
- Digital demodulation for all Signal Hound spectrum analyzers
- Spectrum emission mask measurements
- Interference hunting
- SCPI automation for remote operation via a TCP/IP link
- Economical scalar network analysis

VNA Software

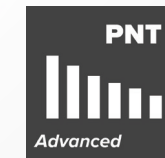


Easily perform S-parameter measurements using the VNA desktop application software. With a customizable interface, modern VNA features, and the advantage of PC-based software, this is the perfect companion for your VNA400 device.

Features include:

- Customizable Interface
- Time Domain Analysis
- Fixture Removal
- Use SCPI to fully automate your measurement needs
- The software runs on your PC

Advanced Phase Noise Measurement Tool Kit



Signal Hound's new Advanced Phase Noise Measurement Tool Kit unlocks enterprise-grade accuracy and cutting-edge features in your test and measurement environment. This feature-rich software kit is activated through Spike™ and requires a separate purchase.

New phase noise features within the licensed software include:

- Single device phase noise measurements
- Jitter measurements
- Traces (Up to 6)
- Markers (Up to 6)
- Automatic signal search
- Trace smoothing
- Automatic spur rejection
- Amplitude noise measurements
- Peak tracking
- Full SCPI automation
- Measurement speed of 1 second at 10 Hz-10 MHz offset (BB/SP/SM devices)

VSG60 Software



Use the VSG60 software for generating a wide variety of waveforms with custom impairments. The software is compatible with Windows and select Linux distributions. Automation is available using SCPI commands. For use with our VSG60A vector signal generator.

Features include:

- LTE waveform generation
- Custom I/Q modulation
- Arbitrary waveform generation
- 802.11a/n/ac/ax waveform generation
- Signal impairments

About Signal Hound

Signal Hound designs and builds powerful, premium accessible test and measurement equipment for engineers and RF professionals around the globe. Whether you're needing EMC precompliance capabilities in a small two-person shop or spectrum monitoring on a national scale, our test equipment is designed with you in mind. Accurate and powerful enough for mission-critical RF analysis, priced at a point accessible to most, and supported by a talented group of engineers committed to what they do – we truly believe that our devices offer unrivaled value in the test equipment industry.

In business since 1996 and selling our own line of Signal Hound test equipment since 2010, we've built the foundation of our company on years of test equipment repair, service, hardware and software development, and manufacturing experience. Signal Hound is a small company with big goals – and an even bigger commitment to providing our customers with an outstanding experience when purchasing and using our products.

