



Bird Technologies®

# SignalHawk™

## SH-362S, SH-361S, SH-362, SH-36S

### Spectrum Analyzer / VNA

The SignalHawk™ Series of Spectrum Analyzers and VNA is the most user-friendly and accurate hand-held test solution available for installing, maintaining and troubleshooting all segments of RF communication systems. Field engineers, technicians, wireless equipment manufacturers, service providers, contractors, tower erectors and military field personnel alike have come to trust the efficiency and precision results of SignalHawk.

### PROBLEMS ▶ SOLUTIONS

#### Low fault location resolution

- ▶ 2 dB directivity and -135 dBm noise floor allows 11,265 points, or 20x the distance window (1488') at the same 1.6" resolution.

#### Low frequency resolution

- ▶ More than 50% greater freq resolution (705 vs. 461 points) than others.

#### Slow sweeps

- ▶ More than 2x faster sweep times than the competition (705 pts in 1.1s vs. 517 pts in 1.8s).

#### Poor lighting or bright light

- ▶ Large 34 sq in high-resolution, full-color display for indoor or outdoor viewing.

#### Cross platform compatibility

- ▶ Compatible with several sensors for additional apps at nearly half the cost of alternatives.

#### Cable loss masking effect

- ▶ Ability to add offsets to minimize cable loss masking effect.

#### Laptop requirement

- ▶ Work orders can be viewed right on the instrument with a .pdf/.doc viewer. Can upload custom userwritten WordPad help file.

#### Lack of access to AC

- ▶ 40% longer battery life (5.5 hours per charge), with field-replaceable battery.

#### Lack of universal connectivity and data storage

- ▶ USB drive stores up to 90,000 traces.

#### Varying field tech skill levels

- ▶ Easy-to-use, intuitive menus with one-button setup and on-board help five ways to look at mismatch.

#### Physically demanding operations

- ▶ Rugged unit, drop tested per military and European standards

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## APPLICATIONS

Cellular, PCS, DCS, 2G, 3G, 4G, CDMA, cdmaOne, CDMA 2000, 1x, 1x EV-DO, GSM, GPRS, EDGE, UMTS, HSDPA, W-CDMA, TDMA, AMPS as well as 802.11, Bluetooth, Broadcast, Emergency, Fire, GPS, HDTV, IBOC, In-Building, Lab, Microwave, NPSPAC, Paging, Police, Private, Project 25, Public Safety, Tactical Military, Telematics, Tetra, Trunking, Utilities, WiMAX, WLAN and WLL.

## SPECTRUM ANALYZER SPECIFICATIONS

<b>Frequency Range</b>	100 kHz to 3.6 GHz
<b>Frequency Resolution</b>	1 Hz
<b>Frequency Uncertainty</b>	± 1 ppm
<b>Reference Aging</b>	± 1 ppm / year
<b>Temperature Drift</b>	± 1 ppm / °C
<b>Data Points</b>	705 displayed
<b>Spectral Purity</b>	-85 dBc @ 30 kHz
<b>Sweep Time</b>	2.2 s, full span; 1 ms, zero span
<b>Resolution Bandwidth</b>	100 Hz to 1 MHz RBW
<b>Video Bandwidth</b>	10 Hz to 300 kHz VBW
<b>Amplitude Accuracy</b>	± 1.0 dB typ, ± 1.5 dB max
<b>Dynamic Range</b>	66 dB, intermod-free
<b>Noise Floor</b>	-135 dBm DANL
<b>Attenuator</b>	0, 10, 20, or 30 dB; internal
<b>Pre-Amplifier</b>	+24 dB gain, internal
<b>Single-Button ACPR, Measurements Demod, C/I</b>	Occ BW, Channel Power, Field Strength, AM/FM



**Power Meter Option:** compatible with Models 5012D, 5010D, 5010T, 5011, 5011-EF, 5016D, 5017D, 5018D, and 5019D power sensors. These external power sensors provide ± 5% (± 0.2 dB) accuracy, with NIST Traceability.

## SIGNALHAWK™ SPECIFICATIONS

<b>Display</b>	8.4", TFT, 800 x 600 pixel
<b>Battery</b>	5.5 hour, field replaceable
<b>Drop Test</b>	1 meter per EN 61010-1
<b>Transit Drop Test</b>	10 drops per MIL-PRF-28800F
<b>Explosive Atmosphere</b>	Per MIL-PRF-28800F 4.5.6.3
<b>CE Compliant</b>	Yes
<b>RF Input, N(F)</b>	+20 dBm (100 mW) max
<b>USB Connectivity</b>	PC; USB drive and accessories
<b>Size and Weight</b>	11.5" x 10.5" x 3.8", 7.8 lbs
<b>Saved Trace Storage</b>	300 internal; 90,000 USB drive
<b>Win CE Viewers</b>	Word, Excel, PPT, PDF, Image
<b>Power Meter</b>	5012, 5010B, 5010T, 5011, 5011-EF, 5016 and 5017 External Sensors, Optional

## VNA SPECIFICATIONS

<b>Frequency Range</b>	1.6 MHz to 3.6 GHz
<b>Frequency</b>	+/-2 ppm uncertainty, 40 kHz res
<b>Data Points</b>	705 default, 12 to 11265 selectable
<b>Sweep Time</b>	0.6 s with 705 data points
<b>RF Output, N(F)</b>	-40 dBm to +10 dBm, 1 dB steps
<b>Interference Immunity</b>	+13 dBm on frequency
<b>Directivity</b>	-42 dB calibrated
<b>1-Port VNA Measurements</b>	Match (VSWR & Return Loss dB) Distance-to-Fault (DTF), Cable Loss
<b>2-Port VNA Loss/Gain</b>	-90 to +50 dB, 12/24V Int Bias-Tee
<b>2-Port VNA Measurements</b>	Gain & Loss (Amplifier Gain, Insertion Loss, Antenna Isolation)

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## SH-362S, SH-361S, SH-362, SH-36S

### MODEL / STANDARD ACCESSORIES

<b>7002A220-1</b>	Soft Carry Case
<b>920-SH36-OPS</b>	OPS Operators Manual
<b>920-SH36-REF</b>	Start-Up Instructions
<b>5A2653-10</b>	USB Cable, 10 ft, USB A (M) to USB B (M)
<b>5A2743-1</b>	AC Adapter/Charger
<b>5A2238-3</b>	Car Adapter/Charger
<b>5A2720-2</b>	Internal Li-Ion Battery, Field Replaceable
<b>7002A210</b>	PC Tool Software and Manual CD's
<b>5A2745-1</b>	USB Drive, Win CE Compatible

Spare standard accessories are available as optional accessories. Manuals and soft/firmware updates available at [www.bird-technologies.com](http://www.bird-technologies.com).

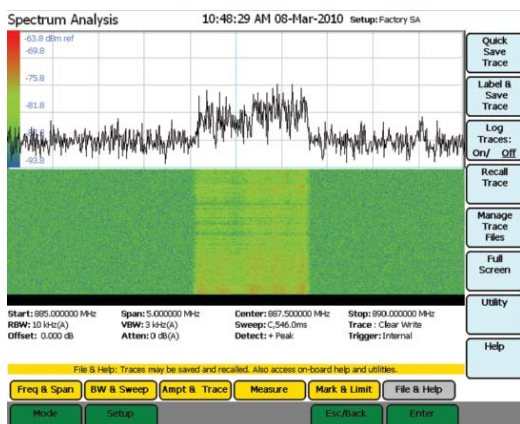
### MODEL / VNA OPTIONAL ACCESSORIES

<b>CAL-MN-C</b>	Calibration Combo, Open/Short/Load, N(M)
<b>CAL-FN-C</b>	Calibration Combo, Open/Short/Load, N(F)
<b>CAL-ME-C</b>	Calibration Combo, Open/Short/Load, 7/16 DIN(M)
<b>CAL-FE-C</b>	Calibration Combo, Open/Short/Load, 7/16 DIN(F)
<b>2-T-MN</b>	Load, 2 W, N(M)
<b>2-T-FN</b>	Load, 2 W, N(F)
<b>5A2264-09-MF-10</b>	RS-232 Cable, 10 ft, 9-pin, (M) to (F)

### MODEL / SPECTRUM ANALYZER OPTIONAL ACCESSORIES

<b>4240-500-10</b>	Field Strength Antenna Adapter, N(M) to SMA(F) *Recommended for field strength antennas.
<b>ANT-100</b>	Field Strength Antenna, 136 to 221 MHz, SMA(M)*
<b>ANT-400</b>	Field Strength Antenna, 400 to 512 MHz, SMA(M)*
<b>ANT-800</b>	Field Strength Antenna, 824 to 894 MHz, SMA(M)*
<b>ANT-900</b>	Field Strength Antenna, 890 to 960 MHz, SMA(M)*
<b>ANT-1800</b>	Field Strength Antenna, 1710 to 1880 MHz, SMA(M)*
<b>ANT-1900</b>	Field Strength Antenna, 1850 to 1990 MHz, SMA(M)*
<b>ANT-2400</b>	Field Strength Antenna, 2400 to 2500 MHz, SMA(M)*
<b>100-SA-MFN-40</b>	Attenuator, 100 W, 40 dB, N(M) to N(F), 2.4 GHz
<b>50-A-MFN-30</b>	Attenuator, 50 W, 30 dB, N(M) to N(F), 4 GHz
<b>25-A-MFN-30</b>	Attenuator, 25 W, 30 dB, N(M) to N(F), 4 GHz
<b>10-A-MFN-30</b>	Attenuator, 10 W, 30 dB, N(M) to N(F), 4 GHz
<b>5-A-MFN-20</b>	Attenuator, 5 W, 20 dB, N(M) to N(F), 4 GHz
<b>2-A-MFN-20</b>	Attenuator, 2 W, 20 dB, N(M) to N(F), 4 GHz
<b>5A2746-1</b>	Headphones

### WATERFALL (SPECTROGRAPH)



### MODEL / OPTIONAL ACCESSORIES

<b>7002A222-1</b>	GPS Sensor
<b>7002A225-1</b>	Hard Transit Case, Watertight
<b>7002A221</b>	Connector Cover
<b>USB-MOUSE</b>	USB Mouse, Ultra-Portable, Optical
<b>USB-HUB</b>	USB Hub, 4-Port, Micro
<b>TC-MNFN-1.5</b>	Test Cable, 1.5 m, N(M) to N(F)
<b>TC-MNFN-3.0</b>	Test Cable, 3.0 m, N(M) to N(F)
<b>TC-MNMN-1.5</b>	Test Cable, 1.5 m, N(M) to N(M)
<b>TC-MNMN-3.0</b>	Test Cable, 3.0 m, N(M) to N(M)
<b>TC-MNFE-1.5</b>	Test Cable, 1.5 m, N(M) to 7/16 DIN(F)
<b>TC-MNFE-3.0</b>	Test Cable, 3.0 m, N(M) to 7/16 DIN(F)
<b>TC-MNME-1.5</b>	Test Cable, 1.5 m, N(M) to 7/16 DIN(M)
<b>TC-MNME-3.0</b>	Test Cable, 3.0 m, N(M) to 7/16 DIN(M)
<b>PA-MNME</b>	Adapter, N(M) to 7/16 DIN(M)
<b>PA-FNME</b>	Adapter, N(F) to 7/16 DIN(M)
<b>PA-MNFE</b>	Adapter, N(M) to 7/16 DIN(F)
<b>PA-FNFE</b>	Adapter, N(F) to 7/16 DIN(F)
<b>4240-550</b>	Adapter Kit, 7/16 DIN
<b>4240-500-1</b>	Adapter, N(F) to N(F)
<b>4240-500-6</b>	Adapter, N(M) to N(M)
<b>4240-500-10</b>	Adapter, N(M) to SMA(F)*
<b>4240-401</b>	Interseries Adapter Kit, N/SMA/T/BNC

### MODEL / OPTIONAL EXTERNAL POWER SENSORS

<b>5012D</b>	Wideband Power Sensor, 350 MHz to 4 GHz, 150 mW to 150 W Avg, 400 W Peak. Measures fwd/rfl avg, VSWR, return loss (dB), peak, burst avg, crest, CCDF. Forward average power accuracy is 4% (0.2 dB).
<b>5010D</b>	Directional Power Sensor, 2 to 2700 MHz, 100 mW to 10 kW, requires elements. Measures fwd/rfl avg, VSWR, return loss (dB), and peak. Forward average power accuracy is 5% (0.2 dB).
<b>5010T</b>	Directional Power Sensor, Tetra Version, 2 to 2700 MHz, 100 mW to 10 kW, req elements. Measures fwd/rfl avg, VSWR, return loss (dB), and peak. Forward average power accuracy is 5% (0.2 dB).
<b>5011</b>	Terminating Power Sensor, 40 MHz to 4 GHz, 10μW to 10 mW (-20 dBm to +10 dBm). Measures forward average power. Accuracy is 5% (0.2 dB).
<b>5011-EF</b>	Terminating Power Sensor, 40 MHz to 12 GHz, 10μW to 10 mW (-20 to +10 dBm) Measures forward average power. Accuracy is 5% (0.2 dB)
<b>5016D</b>	Wideband Power Sensor, 350 MHz to 4 GHz, 25 mW to 25 W Avg, 400 W Peak. Measures fwd/rfl avg, VSWR, return loss (dB), peak, burst avg, crest, CCDF. Forward average power accuracy is 4% (0.2 dB).
<b>5017D</b>	Wideband Power Sensor, 25 MHz to 1 GHz, 500 mW to 500 W Avg, 400 W Peak. Measures fwd/rfl avg, VSWR, return loss (dB), peak, burst avg, crest, CCDF. Forward average power accuracy is 4% (0.2 dB).
<b>5018D</b>	Wideband Power Sensor, 150 MHz to 4 GHz, 100 mW to 25 W Avg, 60 W Peak. Measures fwd/rfl avg, VSWR, return loss (dB), peak, burst avg, crest, CCDF. Forward average power accuracy is 4% (0.2 dB).
<b>5019D</b>	Wideband Power Sensor, 25 MHz to 1 GHz, 100 mW to 100 W Avg, 260 W Peak. Measures fwd/rfl avg, VSWR, return loss (dB), peak, burst avg, crest, CCDF. Forward average power accuracy is 4% (0.2 dB).

