S-Series

SVA Vector Signal Analyzer

Compact, easy to use, vector analyzer for R&D, manufacturing and the field

Features

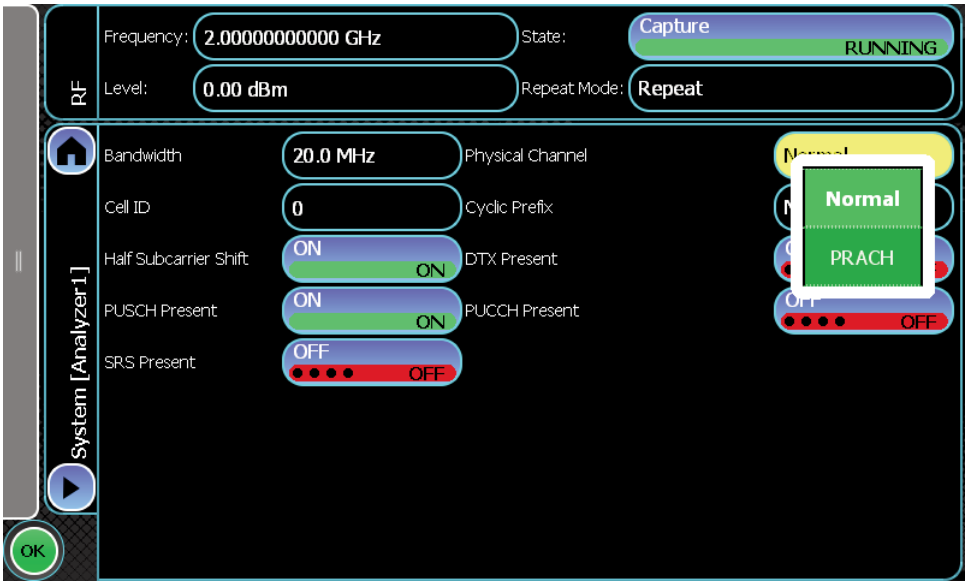
- Wide band cover: SVA-6 - 250 kHz to 6 GHz
  SVA-13 - 250 kHz to 13 GHz
- Input level range to +30 dBm
- Maximum instantaneous bandwidth: 90 MHz
- Digitizer ADC resolution: 13 bits
- Digital downconverter with sample rates up to 250 MS/s
- Displayed Average Noise Level: typ. -148 dBm/Hz
- Spurious free dynamic range: 70 dB
- Intermodulation free dynamic range: 75 dB
- Up to 512 MByte sample memory
- Generic modulation analysis and spectrum analysis as standard
- Measurement suite options for wireless communications test (inc. LTE and 802.11ac)
- Half-rack width, 4U high with 8.5 inch touch-screen user-interface
- Synchronization and interaction with SGD signal generator and other S-Series modules
- "Aerolock™" interlocking mechanism for multiple instrument applications
- LAN and GPIB remote control
- Low cost of ownership through modular design

The SVA employs a large touch-screen user-interface to provide a vector analyzer with unparalleled ease of use. The small form-factor and light weight ensure minimum footprint on the bench or test system and maximum portability. The SVA converts RF signals into digital IF or I&Q sampled data providing vector signal analysis of RF signals with functionality and performance required in the laboratory or the manufacturing test system. With high linearity, low noise and excellent level accuracy, the SVA is ideally suited for the analysis of WLAN, WMAN, WPAN, 2G, 3G, 4G cellular radio signals as well as general purpose analog and digitally modulated signal analysis. A spectrum analyzer mode provides the features and controls you would expect from a conventional spectrum analyzer.

Display and User-Interface

A large 8.5 inch touch-screen LCD enables all relevant set-up information to be displayed on one screen, and without the need to select configurations from lower level menu structures. It is intuitive, easy to use, clear, with large characters and a wide viewing angle. Touch targets are sufficiently large to ensure usability even when wearing gloves.

A mouse and keyboard may also be connected to allow ease of use when using Windows™ features.



Using the touch-screen to set up LTE FDD uplink measurement

Performance Highlights

Level Range: Peak signal powers up +30 dBm can be input directly and with a maximum sensitivity down to typically -148 dBm/Hz, very low level signals are easily discernible from noise, especially useful when measuring transmitter spurious outputs.

Control of RF input level is provided using reliable, high speed electronic switched attenuation. To optimize downconverter operating conditions, RF attenuation is selectable in 1 dB steps to a maximum of 31 dB. IF attenuation is automatically selected in a 35 dB range with 1 dB resolution in order to optimize the ADC operating point thus optimizing of dynamic range for a wide range of input signal powers and signal characteristics.

Level Accuracy: With a total measurement uncertainty of typically ±0.3 dB below 3 GHz, accurate RF power measurements are made possible. Together with <0.08 dB repeatability error, high production yields can be maintained.

High Dynamic Range: The SVA is designed for difficult transmitter measurements such as burst power in TDD and TDMA systems and spectral emissions on cellular terminals. Measurement of GSM burst power ramps with over 80 dB dynamic range is possible in a single step. ACLR and spectral mask measurements on WCDMA signals can also be made in a single step with a measurement range of typically 65 dB for ACLR.

Wide Bandwidth: -1 dB bandwidth of up to 90 MHz is achieved.

Amplitude and phase correction is applied to provide amplitude flatness of ±0.1 dB over a 5 MHz bandwidth and ±0.25 dB flatness for bandwidths up to 67 MHz. Phase compensation ensures phase flatness of <±0.03 radians across the entire corrected bandwidth.

Low Phase Noise: At 2 GHz, 20 kHz offset, the typical phase noise is -116 dBc/Hz.

Fast Switching: Below 6 GHz, frequency settling can be achieved in typically 250 μs, making the SVA ideal for high productivity RFIC testing.

Flexible ADC: Sample data is available as digital IF samples at the full ADC sample rate or as digitally downconverted, decimated and re-sampled I & Q data samples at a user defined rate. Sample data may be streamed out of the rear panel data interface. Samples rates of up to 62.5 MSa/s can be supported for streaming applications e.g. in radio system emulation type applications or for producing uninterrupted time records for RF events. On board sample memory supports acquisition of up to 256 M x 16 bit samples. The ability to commence processing of captured IQ whilst acquisition is still in progress provides near real time measurement speed.

Data reduction is supported whereby the user can select a subset of acquired data to be passed for processing. This reduces unnecessary data transmission and can help improve measurement speed. This can be especially useful for TDMA type systems such as GSM. It makes it possible to only transfer active burst data for analysis reducing the number of samples to transfer by approximately 80%.

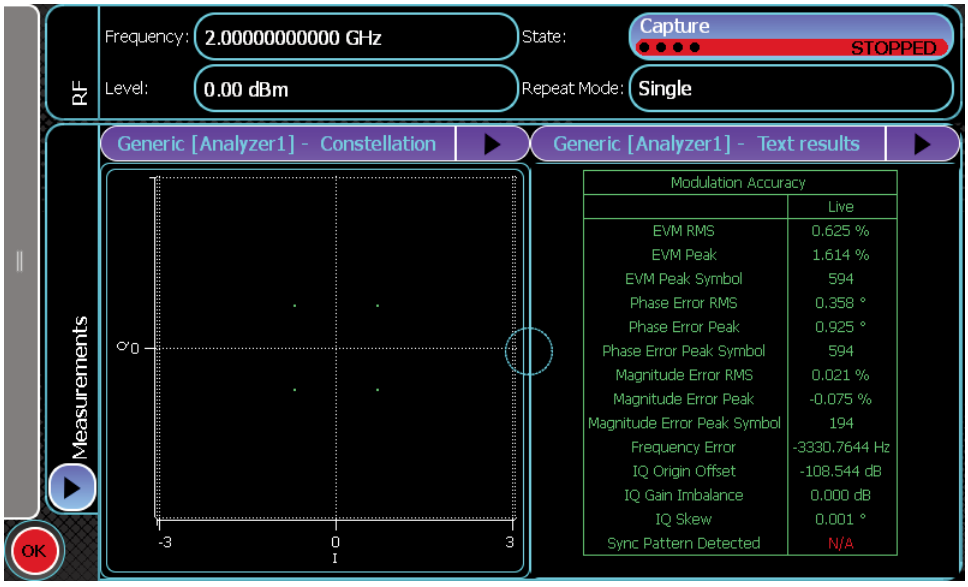
Data acquisition can be edge triggered and the sample length defined by the user or it may be gated in which case the acquisition period is defined by the gate width.

Triggering and Synchronization: The SVA's highly versatile acquisition trigger modes maximize flexibility in synchronized measurement applications. Acquisition can be triggered by software or hardware triggers including the rear panel TTL and digital inputs. Internal IF video and frequency selective IQ level triggering can be derived from the received signal with facilities to prevent false triggering from noisy signals. All trigger modes are supported by a user definable +ve and -ve trigger delay.

A trigger hold off mode is provided to allow control of trigger re-arming. This can be especially useful when acquiring TDD type signals as used in WLAN and WIMAX.

Measurement Personality Highlights

As standard the SVA is supplied with generic demodulation capability for FSK, PSK, QAM and FM demodulation.



Generic QPSK demodulation- Constellation and text results

Also included as standard is a spectrum analysis function providing frequency and time domain analysis of digitized I & Q data. Analysis can be performed for frequency spans up to 200 MHz. The resolution bandwidth is continuously variable from 1 Hz to 10 MHz using 3 dB or noise equivalent bandwidth windows.

The range of spectrum measurement functions include:

Channel Power and Adjacent Channel Power Measurement: The user defines the channel configuration to be measured (i.e. channel width, channel spacing, center frequency, etc). The measurement then computes the central channel RMS power as an absolute and the adjacent channel powers relative to this from the FFT spectrum. Four adjacent channels are examined (two either side of the central channel). In manual mode up to 99 channels can be specified each with arbitrary channel spacing and channel width.

Occupied Bandwidth is calculated from the FFT spectrum by a function that returns the bandwidth in which a user defined percentage of the total signal power is occupied.

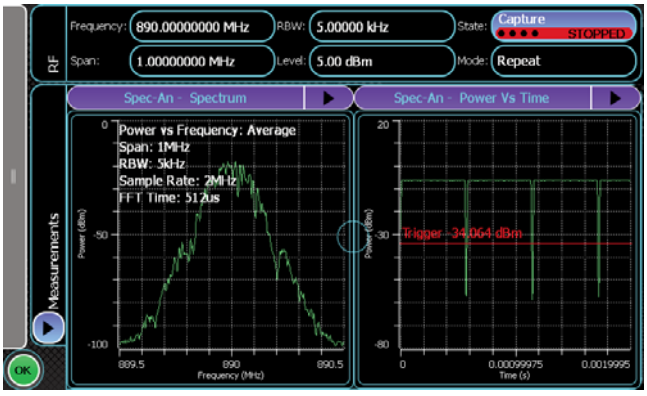
FFT spectrum can be configured as either RMS averaged or peak hold in which case the function will output an averaged result or retain peak values if repeatedly called. The number of averages is user defined.

A marker power function is provided together with a marker peak find and a next peak search function. These enable measurement of discrete signals within the FFT spectrum.

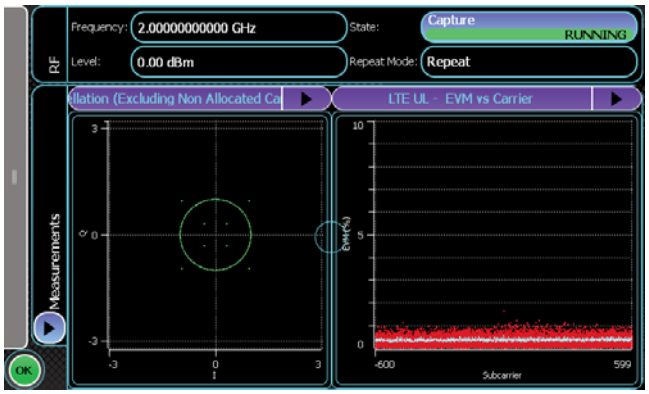
Time domain analysis functions include computation of average power of a range of IQ data samples plus power and frequency versus time. The time window for analysis can be the entire IQ sample array or any user defined subset.

Optional Analysis Libraries

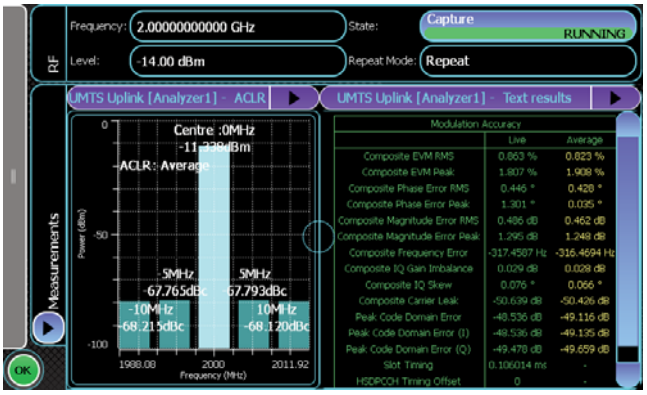
Signal analysis libraries are available for measurement of most 2G, 3G, 4G, WMAN, WPAN, WLAN and LTE transmissions. These provide measurement of power, modulation quality and spectrum parameters in accordance with the relevant standards for mobile terminal testing, ideal for both laboratory and manufacturing.



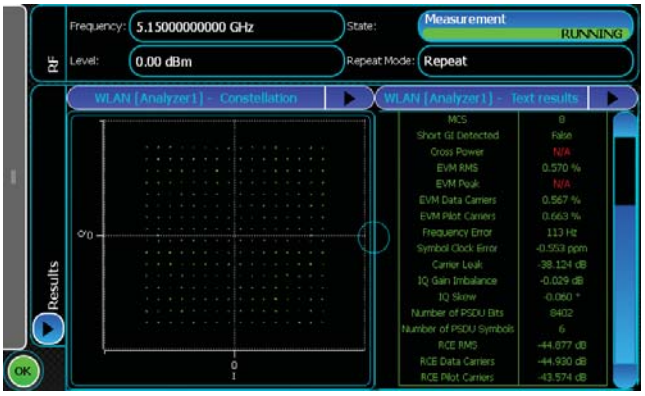
GSM, 8 slots, FFT and Power vs. Time



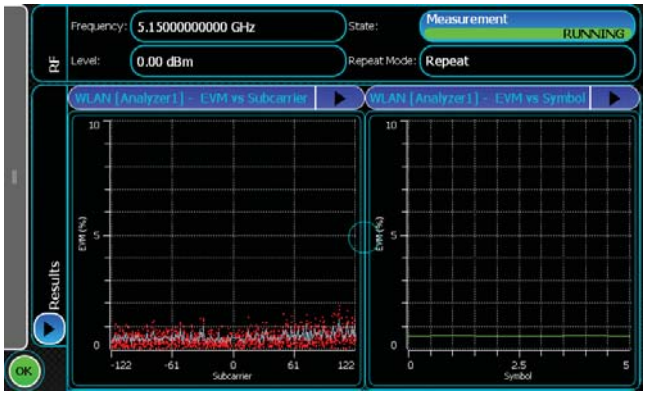
LTE FDD UL Constellation and EVM vs. Carrier



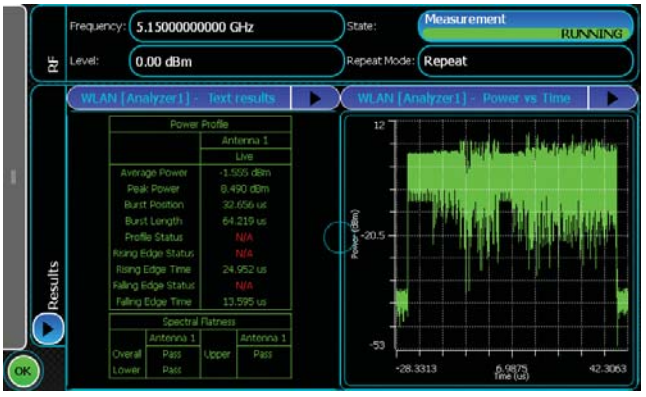
UMTS UL ACLR and text results



802.11ac 80 MHz VHT MC8 Constellation and EVM



802.11ac 80 MHz VHT MC8 EVM vs. subcarrier and symbol



802.11ac 80 MHz VHT MC8 Power measurements

A full description and specification for each measurement personality is provided in a separate datasheet.

Modular instrument concept employing Aeroflex's "Aerolock" interlocking mechanism

The SVA is complemented by the SGD Digital RF Signal Generator and the two instruments are designed to work as a pair. The two instruments may be connected physically, using the "Aerolock" interlocking mechanism, and electrically via a USB interface. Such a test system may be further enhanced with the addition of one or more of a selection of S-Series modules which mount above or below instruments. "Aerolock" is an ingenious, simple and strong interlocking mechanism allowing S-Series instruments and a full-rack width module, or two half-rack width modules, to be joined as one, creating a bespoke test solution. Weighing-in around 8 kg each, two S-Series instruments joined together may be easily carried within the laboratory, the factory or the field without necessitating a 2-person lift.

Aerolock™ interlocking mechanism

An SGD and SVA joined together as one

Remote Operation

The SVA supports remote control via LAN and GPIB interfaces using SCPI format commands where possible. Remote desktop and VNC are also supported allowing off-site remote control.

Non-Volatile Memory

Full instrument stores may be independently named allowing quick search of required memory. No settings data is stored in any other memory location within the instrument.

Removable Hard Disk (Option)

For use in secure areas, the optional removable hard disk allows easy removal of all sensitive instrument settings stores and captured data in the event the instrument is required to leave the secure area.

Low Cost of Ownership

The SVA comes with a standard 2-year warranty and recommended 2-year calibration periodicity. Options to extend the warranty to five years are available.

The SVA's modular architecture means that repair can be effected in 30 minutes by replacement using calibrated exchange modules.

The instrument's software may be installed simply from a USB port so that upgrades can be performed with the minimum down-time and maximum convenience. The latest software version will always be available on Aeroflex's web site.

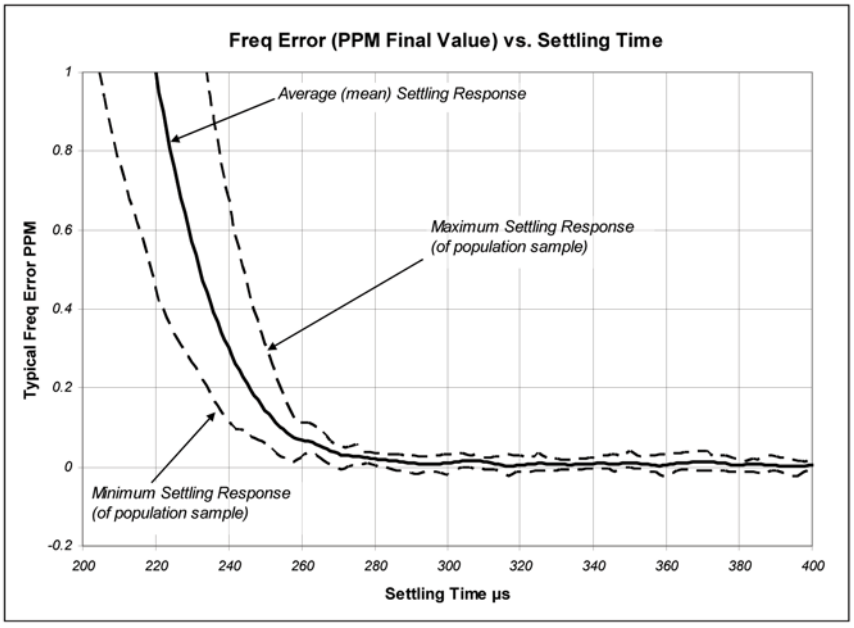
SPECIFICATIONS

All specifications apply after a warm-up period of 20 minutes. Performance data for each measurement suite, refer to data sheet 46891/465, SVA Modulation Analysis Options.

FREQUENCY

Range	*250 kHz to 6 GHz (SVA-6)* *250 kHz to 13 GHz (SVA-13)*
Resolution	*≤3 GHz, 1 Hz*
	≤6 GHz, 2 Hz
	≤9 GHz, 3 Hz
	>9 GHz, 6 Hz
Accuracy	*As frequency reference*
Settling Time	*Typical times taken to be settled at final frequency* *Up to 3 GHz settled to 0.7 ppm or 1 kHz whichever is the smaller* *>3 GHz, ≤6 GHz settled to 2 kHz* *>6 GHz, ≤9 GHz settled to 3 kHz* *>9 GHz settled to 6 kHz*

<500 MHz	*>500 MHz*
2 ms	*325 µs*



Typical frequency settling times

Response is a composite of 10 devices at different settling frequencies. Freq error direction has been adjusted where necessary to display a positive response.

LEVEL

Maximum Input Power	*+30 dBm with 10 dB input attenuation*	
RF Input Attenuator	*0 to 31 dB in 1 dB steps*	
IF Attenuator	*0 to 35 dB in 1 dB steps*	
Accuracy at 23°C ±5°C	*<1 MHz*	*<±1.0 dB typ.*
	≥1 MHz, <500 MHz	*<±1.0 dB (typ ±0.5 dB)*
	≥500 MHz, ≤3 GHz	*<±0.7 dB (typ. ±0.3 dB)*
	>3 GHz, ≤6 GHz	*<±1.0 dB*
	>6 GHz	*<±2.0 dB*
	Temperature stability	*±0.02 dB/°C, ≤6 GHz*
		±0.06 dB/°C, > 6 GHz
Repeatability	*≤6 GHz, better than ±0.08 dB* *>6 GHz, better than ±0.15 dB* *after warm up following a return from a change of frequency or level valid for at least 2 hours and excluding temperature influence*	
Display Scale Linearity	*Input level set to 0 dBm, attenuation set to auto.* *better than 0.1 dB across a 40 dB range, referenced at -10 dBm input* *better than 0.2 dB across an 80 dB range, referenced at -10 dBm input*	
Settling Time (List Mode)	*≤3 GHz*	*<±0.3 dB, 250 µs*
	>3 GHz, ≤6 GHz	*<±1.0 dB, 250 µs*
	>6 GHz	*<±0.7 dB, 750 µs*
Input Impedance	*50 Ω nominal*	
Input VSWR (Return Loss)	*≤6 GHz*	*<1.5:1 (14 dB) typ.*
	>6 GHz, ≤10.5 GHz	*<1.7:1 (12 dB) typ.*
	>10.5 GHz	*<1.9:1 typ.*

SPECTRAL PURITY

SSB Phase Noise (typical dBc/Hz ambient room temperature):

Fc	***2 GHz***	***5 GHz***	***12 GHz***
Offset			
100 Hz	*-75*	*-78*	*-55*
1 kHz	*-97*	*-94*	*-83*
10 kHz	*-107*	*-99*	*-89*
20 kHz	*-110*	*-103*	*-94*
100 kHz	*-130*	*-122*	*-114*
1 MHz	*-140*	*-136*	*-127*
10 MHz	*-142*	*-140*	*-136*

LINEARITY AND NOISE

Third Order Intermodulation	*≥30 MHz, <6 GHz -75 dBc typ.* *(2 CW tones at up to 0 dBm per tone, 500 to 5000 kHz spacing, manual mode, RF input atten. 20 dB)*
Adjacent Channel Leakage Ratio (in any 3GPP band below 3 GHz)	*Better than 60 dB (3GPP downlink test model 1)* *Better than 65 dB typ, (3GPP uplink)*
Spurious (excluding IF image frequencies and harmonic responses)	*-70 dBc typ.* *(within the analysis bandwidth at the digitizer reference level)*
Harmonic Distortion	

Incident Power	*Incident Frequency*	*2nd Harmonic (dBc typ.)*
0 dBm	*850 MHz*	*-70*
	1900 MHz	*-75*
	2500 MHz	*-63*
	5000 MHz	*-64*
	6500 MHz	*-62*
-5 dBm	*850 MHz*	*-75*
	1900 MHz	*-80*
	2500 MHz	*-68*
	5000 MHz	*-69*
	6500 MHz	*-67*
-10 dBm	*850 MHz*	*-78*
	1900 MHz	*-85*
	2500 MHz	*-73*
	5000 MHz	*-74*
	6500 MHz	*-72*

Residual Responses (No signal input, RF input terminated in 50 Ω, minimum RF and IF attenuation)	*≤6 GHz, better than -95 dBm, (typ. -100)* *>6 GHz, better than -95 dBm typ.*
Noise Spectral Density (No signal input, RF input terminated in 50 Ω, minimum RF and IF attenuation)	*<500 MHz <-135 dBm/Hz (typ -148)* *≥500 MHz, ≤5.8125 GHz <-140 dBm/Hz (typ -147)* *>5.8125 GHz <-137 dBm/Hz (typ -147)*

A/D CONVERSION

Resolution	*13 bits*
ADC Clock	*250 MHz*
Sample Rate Control, IQ Data	*15.3 kSa/s to 250 MSa/a*
Resolution	*0.1 Hz when the sample rate is entered as a real number* *Sample rate can be entered as a fraction made up of integers*
Sample Rate Accuracy	*As per frequency standard*
Amplitude Flatness (correction on)	

Operating Frequency	*IF Bandwidth (MHz)*			
	<±0.15 dB Flatness	*<±0.25 dB Flatness*	*<±0.65 dB Flatness*	*<±1.0 dB typ. Flatness*
All	*5*			
<500 MHz		*15*		*20*
≤1 GHz		*33*		*36*
>1 GHz			*67*	*90*

Phase Flatness	*< 500 MHz ±0.03 radians pk-pk to 15 MHz* *≤1 GHz ±0.03 radians pk-pk to 36 MHz* *>1 GHz ±0.03 radians pk-pk to 67 MHz*
Data Output	*A sample data block (equal to the data capture length) can be stored to the memory internal to the SVA* *IF data samples have 16 bit resolution* *IQ data samples can be 16 or 32 bit resolution*
Sample Memory	*256 M x 16 bit samples*

TRIGGERING

Trigger Mode	Single, Repeat
Trigger Type	Internal, Burst, External
Hardware Trigger Sources	Internal IF or IQ, data (with user-defined level threshold) and timer External TTL, 3 inputs
Trigger Polarity	+ve or –ve (Edge trigger) for Burst or External
Trigger Functions	
Delayed trigger	0 to +2 GSa
Trigger Latency	0 to 1 sample at the output sample rate

SPECTRUM ANALYZER MODE

Frequency Span	Variable between 4 kHz to 200 MHz and zero span (Power vs. Time)
RBW	Variable between 1 Hz to 10 MHz
Resolution	1 Hz
Window Type	NEBW: Gaussian 3 dB: Gaussian fixed: Blackman Harris 5 term
Channel Power and Adjacent Channel Power Measurement	2 upper and 2 lower or user defined up to 99
Channel filter alpha	0.0 to 1.0
Channel spacing	up to 15 MHz
Channel width	up to 25 MHz
Occupied Bandwidth Percentage Range	1% to 99.99%
N Peaks	Frequency and power output for up to 10 signal peaks sorted in order of descending power
Average Power	The RMS average power for all IQ samples
Markers	4 markers plus delta marker
Marker Functions	Marker power & frequency with peak search, next peak, peak track Power and time Frequency and time
Traces	Live, avg, max. hold Spectrum trace, power versus time trace, frequency versus time trace Text results summary

FREQUENCY MODULATION	
Mode	Stereo / Mono
De-emphasis	None, 50 µs, 75 µs
Demodulated Audio Measurement Settings	Filter weighting: None, A or C (IEC 61672:2003) No of harmonics: 0 to 147 (Typically 7) Level units: Linear / logarithmic Measurement bandwidth: 20 Hz to 20 MHz
MEASUREMENTS	
Frequency Deviation	Deviation (Pk-Pk), mono deviation (M), stereo deviation (S), Pilot deviation (P) Deviation Range: Stereo: 22.5 kHz to 75 kHz Mono: 22.5 kHz to 200 kHz Resolution: 0.1% Accuracy: Typically ±1% of total deviation
Modulation Frequency and Level	Frequency Range: 20 Hz to 20 MHz Accuracy: ±0.1% typical Level (dB rms / V rms) Accuracy: Typically ±0.1 dB
Audio Distortion (SNR, SINAD, THD, THD+N)	SNR Range: Mono up to 80 dB, Stereo up to 70 dB SINAD Range: Range: Mono up to 80 dB, Stereo up to 64 dB Resolution 0.1 dB Accuracy: Typically ±0.5 dB THD Accuracy: <0.1% with deviation of 22.5 kHz and max harmonic N=7 THD+N Accuracy <0.2% with deviation of 22.5 kHz and max harmonic N=7
Stereo Isolation (crosstalk)	100 Hz to 15 kHz >50 dB down Accuracy: Typically ±0.5 dB
DIGITAL MODULATION	PSK FSK, 2FSK, 4FSK, MSK BPSK, QPSK, OQPSK, DQPSK, π/4 DQPSK, 8-PSK, D8PSK, π/8 D8PSK, 8-PSK EDGE QAM, 32-QAM 16-QAM, 64-QAM, 128-QAM, 256-QAM, 512-QAM
Measurements	Measurement and reference filter: None, Raised Cosine (RC), Root Raised Cosine (RRC), Half Sine, Rectangular Symbol Rate Range: 10 ksym/s to 50 Msym/s Origin offset: On/Off
Modulation Accuracy EVM	Measured with 2000 RRC pulse shaped symbols with matching measurement/ reference filters selected, symbol offset 10, AWGN channel, at reference power level, receiver tuned to transmit frequency.

Modulation Type	EVM Range	Accuracy
BPSK	Up to 50%	Max (0.5%, 10% of measured EVM)
OQPSK DQPSK π/4 DQPSK	Up to 30%	Max (0.5%, 10% of measured EVM)
8-PSK D8PSK, π/8 D8PSK, 8-PSK EDGE	Up to 10%	Max (0.5%, 10% of measured EVM)
16-QAM	Up to 10%	Max (0.5%, 10% of measured EVM)
64-QAM	Up to 5%	0.5%

	Indication: *EVM RMS* *EVM Peak and symbol number* *Phase Error RMS/Peak (degrees)* *Phase Error Peak and symbol number* *Magnitude Error RMS/Peak (%)* *Magnitude Error Peak and symbol number*
Frequency Error	*Measurement range:* *Up to ±100 kHz for symbol rates <1 Msym/s* *Up to ±1 MHz for symbol rates >1 Msym/s* *Accuracy:* *<±1 Hz for frequency error <100 kHz* *<±10 Hz for frequency error >100 kHz*
IQ Origin Offset	*Measurement range: Up to -14 dB (25 %)* *Residual Error: -40 dB (1 %)*
IQ Gain Imbalance	*Resolution: 0.1 dB*
IQ Skew	*Resolution: 0.2 degrees*
Pattern Synchronization	*When it is enabled, the system will search the pattern from the captured IQ data.*
Pattern Type	*User Defined, TETRA TSC0, TETRA TSC1*
Symbol Offset	*0 to 1000*
Trace Displays	*Constellation* *Burst Power vs. Time* [1] *EVM vs. symbol* *Phase Error vs. symbol* *Magnitude Error vs. symbol* *CCDF*
GENERAL MEASUREMENTS	
Analysis Mode	*All IQ, Burst IQ*
Spectrum FFT Overlap	*0 to 99%*
Spectrum Gating	*Enable/Disable*
Window Type	*Gaussian Noise, Gaussian 3 dB, Blackman Harris*
Channel Filter Type	*None, Raised Cosine (RC), Root Raised Cosine (RRC)* *Channel Filter Alpha (bandwidth coefficient)* *0 to 1, resolution 0.1*
Display Traces	*Captured Power vs. Time* *Spectrum* *Adjacent channel power* *Occupied Bandwidth* *Spectrum Mask*
Measurements *Average Power (dBm)*	*Accuracy: Refer to specification*

Adjacent Channel Power	*Number of channels: user defined up to 99* *Total measurement span: up to 200 MHz* *ACP filter: None, Raised Cosine (RC), Root Raised Cosine (RRC)* *ACP filter alpha: 0.0 to 1.0* *Indication: Reference channel power (dBm), adjacent channel power (dBc)* *Accuracy: Typically 0.1 dB / 10 dB excluding the effects of noise*
Occupied Bandwidth	*Range setting: 1% to 99.9%* *Upper/lower frequency (Hz)*
Spectrum Mask	*Status (Pass/Fail)* *Proximity to mask level (dB)* *Proximity to mask frequency (Hz)* *Reference Level (dBm)* *Accuracy* *Typically 0.1 dB / 10 dB excluding the effects of noise*
Burst Power Location[1]	*Burst Position (ms) relative to start of capture* *Burst Length (ms)*
CW Frequency	*CW frequency Offset (Hz)*
Demodulated Bits	*The result is presented in a table with the left column containing indexes for sequences of 16 bits presented in the right column.*
Demodulated Symbols	*The result is presented in a table with the symbol and value as column headers. The symbol column contains the symbol number and the value column contains the binary respresentation of the symbol value.* *(1) when analysis mode set to Burst IQ*

REFERENCE FREQUENCY OSCILLATOR

Type	*OCXO*
Frequency	*10 MHz*
Temperature stability (0 to 50C)	*$<\pm 1 \times 10^{-8}$ typ.*
Ageing rate	*<1 in 10^9 per day (<0.001 ppm)* *<1 in 10^7 per year (<0.1 ppm)*

GENERAL DATA

Remote Control

Systems	*GPIB (IEEE 488)* *Ethernet (TCP/IP)*
Command set	*SCPI*
Interface functions	*SH1; AH1; T6; L4; SR1; RL1; PP0; DC1; DT1; C0; E2*

Memory (80 GB Hard Disk)

Up to 500 full instrument setting stores

Each memory store may be given a unique name

Removable Hard Disk – (Option 005)

For use in secure areas, the removable hard disk may be extracted from the rear panel by releasing two screws.

The removable hard disk also contains the instrument's operating software.

Recommended Calibration Cycle

24 months

Weight

8.4 kg (18.5 lbs)

Dimensions - H x W x D

195 mm (178 mm without feet - 4U) x 222 mm x 490 mm (7.67 x 8.74 x 19.29 in. (7.0 in. without feet))

Instrument includes side strap handle and front tilt feet.

Instrument includes Aerolock™ interlocking mechanism with modules mounted above and below, and to another S-Series instrument on either side.

FRONT PANEL CONNECTORS

RF Input	*50 Ω N-type*
2 x USB 2.0	*Used with a memory stick for transferring memory stores, or other files in or out of the instrument* *Mouse or keyboard input*

REAR PANEL CONNECTORS

RF Input	*50 Ω N-type (option 007)* Note: Front panel RF Input is not available with this option.
TTL Trigger - 3 inputs	*BNC – LVTTL logic input thresholds.* *Damage levels: -5 / +10 V*
4 x USB 2.0	*Used with a memory stick for transferring memory stores, captured IQ data or other files in or out of the instrument* *Module plug & play connection*
Reference frequency input	*50 Ω BNC accepts 10 MHz at 200 mV to 2 V RMS into 50 Ω or 100 kΩ nominal* *Damage levels: -0.5 / +3 V*
Reference frequency output	*BNC – 10 MHz at 2 V pk-pk nominal square wave into 50 Ω* *Damage levels: -0.5 / +3 V*
GPIB Interface	*As described under Remote Control*
LAN Interface	*As described under Remote Control*

ENVIRONMENTAL

Rated Range of Use	
Temperature	*0 to 50°C*
Humidity	*Up to 93% at 40°C*
Altitude	*Up to 3050 m*
Conditions of Storage and Transport	
Temperature	*-40 to +71°C*
Humidity	*Up to 95% at 40°C*
Altitude	*Up to 4600 m*
EMC	*EN 61326-1, Emissions Class B, Immunity Table 1 – Performance Criteria B*
Safety	*EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use-Part 1, General requirements.*
Mechanical	*MIL-PRF-28800F Class 3*

Power Requirements

AC Supply	*100 – 240 V ~ (Limit 90 - 264 V)* *50 - 60 Hz ~ (Limit 45 - 66 Hz)* *110 VA max.*

User Interface

Screen size	*8.5 inch, 16:9 aspect ratio, colour touch-screen*
Keys / switches	*Power on / standby* *Home key*

ORDERING INFORMATION

SVA-6	250 kHz to 6 GHz RF Digitizer and Vector Analyzer
SVA-13	250 kHz to 13 GHz RF Digitizer and Vector Analyzer
Option 005	Removable Storage Disk
Option 007	Rear panel connectors

Spectrum Analysis and Generic Demodulation measurement suites included.

Analysis options:

Option 150	Modulation analysis package- Basic (options 152, 102, 103, 106, 109)
Option 151	Modulation analysis package- Advanced (options 150, 107, 108, 110)
Option 152	3GPP (GSM, EDGE, EGPRS, EGPRS2, WCDMA, HSPA, HSPA+) Measurement suite
Option 102	3GPP2 (CDMA2000, 1xEVDO (0+A)) Measurement suite
Option 103	WLAN (a, b, g, n) Measurement suite
Option 106	Bluetooth V.11 + V.21 + EDR + Version 4 Measurement suite
Option 107	LTE FDD Rel. 8 Measurement suite
Option 108	LTE TDD Rel. 8 Measurement suite
Option 109	TD-SCDMA (3GPP TDD-LCR) Measurement suite
Option 110	WLAN 802.11ac Measurement Suite (requires option 103)

Extended Warranty Options

Option 203	3 year warranty
Option 204	4 year warranty
Option 205	5 year warranty

Supplied Accessories

AC supply lead

Getting Started manual

CD-ROM containing operating manual

CD-ROM containing factory test results

Optional Accessories

47000/127	Operating manual (paper format)
TBA	Service manual supporting repair to module level (includes semi-automatic adjustment software)
43129/189	1.5 m GPIB lead
46662/836	Soft carry case
46662/835	Hard transit case
23448/030	USB Type A - Type B cable, 1.5 m
46885/505	Single instrument rack mounting kit (front panel brackets)
46885/506	Double instrument rack mounting kit (front panel brackets)
43139/042	RF double screened connector cable 50 Ω, 1.5 m, BNC (m)
54311/095	RF double screened connector cable 50 Ω, 1 m, type N connectors
54311/092	Coaxial adapter N male to BNC female
59999/163	Precision coaxial adapter N male to SMA female

Complementary S-Series instruments and modules (see separate datasheets)

SGD-3/6	100 kHz - 3/6 GHz Digital RF Signal Generator
SCO-6	10 MHz - 6 GHz Combiner module
SPA-6	10 MHz - 6 GHz Power Amplifier module

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

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