S4082V Series

Signal/Spectrum Analyzer

S4082V-B/D/E/F/H/L/N/P

(2Hz to 8.4GHz/18GHz/26.5GHz/45GHz/50GHz/67GHz/90GHz/110GHz)

Saluki Technology Inc.

Product Overview

Saluki S4082V series signal/spectrum analyzer is the new flagship product of Saluki company. It has excellent RF performance in terms of displaying average noise level, phase noise, intermodulation rejection, dynamic range, amplitudeaccuracy and test speed. It has powerful spectrum analysis, standard-compliant power measurement suite, I/Q analysis, transient analysis, pulse signal analysis, real-time spectrum analysis, analog modulation analysis, vector signal analysis and many other measurement functions.

Good expansion capability can build test system or secondary development through a variety of digital and analog output interfaces. Up to 2GHz analysis bandwidth, with the corresponding analysis options, to meet the demanding needs of signal and equipment testing in mobile communications, self-driving radar, satellite communications, Internet of Things, aerospace and defense, etc.

Main Features

- **Wide band coaxial coverage from 2Hz to 110GHz (external extension up to 1.1THz)**
- **Phase noise -134dBc/Hz @10kHz offset at 1GHz carrier**
- **Built-in 2GHz analysis bandwidth**
- **I/Q data stream interface with 2GHz bandwidth**
- **Rich wireless communication signal analysis function**
- **Powerful satellite RF test function**
- **Comprehensive radar signal analysis function**
- **15.6-inch capacitive multi-touch operation**

Real-time spectrum analysis with 1.2GHz bandwidth is available, and the shortest duration of 100% probability of intercept (POI) signal is better than 0.28μs, FFT rate: 315432/s which can be used for the capture measurement of various transient burst signals such as pulse signal, burr signal, intermittent signal, etc.

Comprehensive Spectrum Analysis Capabilities

Saluki S4082V series signal/spectrum analyzer has a wealth of spectrum parameters test function, can provide more comprehensive and detailed analysis results.

Support frequency sweep and FFT sweep

Sweep points between 01 ~ 120001 arbitrary selection, the longest scan time of 16000s, zero frequency width of the shortest scan time of 1us.

Rich trace and detector type

Support 6 traces configurations, 6 detector methods, 3 averaging types, with rich marker measurement functions such as noise marker, bandwidth power, power spectral density, etc., and support trajectory statistics, automatic saving and recall of traces, etc.

Support waterfall chart display of historical traces

The signal/spectrum analyzer can save 10000 frames of waterfall traces, clearly show the signal spectrum change pattern.

One-click power measurement kit

With test functions such as Occupied bandwidth, Adjacent channel power, power statistics, Burst power, Harmonic distortion, Third-order intermodulation, Spurious emission, spectrum emission mask, etc.

Comprehensive Radar Signal Analysis Capabilities

Saluki S4082V series signal/spectrum analyzers have built-in radar signal measurement software, which can perform multi-level measurement and analysis of pulse modulated signals, and display them in various display methods such as spectrum, time map, parameter table, etc., to assist in the performance measurement of radar systems and problems.

Abundant pulse parameter measurements

Support pulse signal spectrum, time domain characteristic test, can simultaneously measure pulse width, pulse period, pulse rise and fall time, power drop in pulse, peak power, minimum power, top value, bottom value, pulse amplitude, preshoot, overshoot , frequency error peak value, frequency error RMS, frequency offset and other pulse parameters are analyzed and displayed.

Intra-pulse characteristics analysis

Detailed analysis of amplitude, intra-pulse frequency/phase characteristics, and spectral characteristics can be performed on any selected pulse.

Inter-pulse characteristics analysis

With pulse parameter trend analysis and statistical analysis functions, it can analyze the variation trend and distribution characteristics of inter-pulse characteristic parameters.

Pulse Signal Analysis Measurement

Large Touch Screen, More Convenient Control

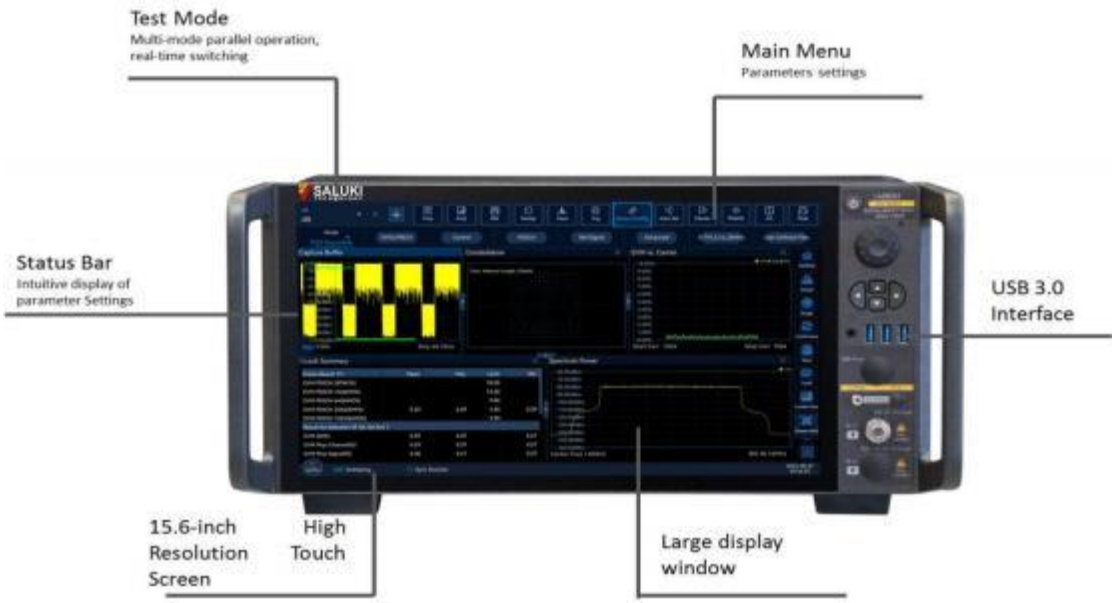
The hardware configuration of Saluki S4082V series signal/spectrum analyzer has been improved in an all-round way. It adopts high-performance processor and large touch screen, which makes the operation of the instrument more convenient.

High-performance processor, large memory

Using i7 processor and 16G memory, it runs more smoothly and ensures the efficient operation of long-term testing.

15.6-inch large touchscreen

Various measurement results can be seen at a glance, multi-touch is supported, and the operation is simple and efficient. Support interface area layout dynamic adjustment and custom menu. Parallel operation and display of multiple measurement modes, convenient and flexible mode switching.



Technical Specification

<table>
<tr><td>Frequency range</td><td>
<table>
<tr><th>Model</th><th>DC coupled</th><th>AC coupled</th></tr>
<tr><td>S4082V-B</td><td>2Hz to 8.4GHz</td><td>10MHz to 8.4GHz</td></tr>
<tr><td>S4082V-D</td><td>2Hz to 18GHz</td><td>10MHz to 18GHz</td></tr>
<tr><td>S4082V-E</td><td>2Hz to 26.5GHz</td><td>10MHz to 26.5GHz</td></tr>
<tr><td>S4082V-F</td><td>2Hz to 45GHz</td><td>10MHz to 45GHz</td></tr>
<tr><td>S4082V-H</td><td>2Hz to 50GHz</td><td>10MHz to 50GHz</td></tr>
<tr><td>S4082V-L</td><td>2Hz to 67GHz</td><td>10MHz to 67GHz</td></tr>
<tr><td>S4082V-N</td><td>2Hz to 90GHz</td><td>—</td></tr>
<tr><td>S4082V-P</td><td>2Hz to 110GHz</td><td>—</td></tr>
</table>
</td></tr>
<tr><td>10 MHz Precise Frequency Reference</td><td>Frequency accuracy:
± (last calibration date × aging rate + temperature stability + calibration accuracy)
Aging rate: ±1 × 10-7/year
Temperature stability: ± 1.5×10-8</td></tr>
<tr><td>Frequency Readout Accuracy</td><td>± (frequency readout × frequency reference accuracy+0.1% frequency band+5% resolution bandwidth+2Hz+0.5 horizontal resolution*)
*: horizontal resolution = span/ (sweep points − 1)</td></tr>
<tr><td>Sweep Points</td><td>01 to 120001</td></tr>
<tr><td>Frequency Counting</td><td>Accuracy :± (frequency readout × frequency reference accuracy+0.1Hz)
Frequency Counting Resolution: 0.001 Hz</td></tr>
<tr><td>Span</td><td>Range: 0Hz (zero frequency span),10Hz to the highest frequency of the model
Accuracy: ± (0.1%× Frequency span+ Frequency span/ (sweep points-1))</td></tr>
<tr><td>Sweep Time Range</td><td>Frequency span ≥10Hz: 3us to 16000s ; Frequency span =0Hz: 1us to 16000s
Sweep accuracy (frequency span ≥10Hz, sweep mode): ± 0,01% nom</td></tr>
<tr><td>Resolution Bandwidth</td><td>Range: 0.1Hz to 20MHz (1,2,3,5 steps, can 4, 5,6, 8 ,10 steps)
Conversion uncertainty: ±0.10dB 1Hz to 3MHz (1,2,3,5 steps)
±0.30dB 5MHz to 20MHz (1,2,3,5 steps)</td></tr>
<tr><td>Analysis Bandwidth</td><td>Standard: 10MHz
Option H38-40: 40MHz
Option H38-200: 200MHz
Option H38-400: 400MHz
Option H38-600: 600MHz
Option H38-1200: 1.2GHz
Option H38-2000:2GHz</td></tr>
<tr><td>Video Bandwidth</td><td>1Hz to 20MHz (4,5,6,8 steps)</td></tr>
<tr><td>Trigger Source</td><td>Free, Line, video, external 1, external level 2, burst RF, timer</td></tr>
<tr><td>Trace Detector</td><td>Normal, positive peak, negative peak, sample, video average, power average, voltage average</td></tr>
<tr><td>SSB Phase Noise (1GHz carrier,20°C ~ 30°C)</td><td>
<table>
<tr><th>Frequency offset</th><th>Spectfication</th><th>Typical</th></tr>
<tr><td>100Hz</td><td>-107dBc/Hz</td><td>-115dBc/Hz</td></tr>
<tr><td>1kHz</td><td>-125dBc/Hz</td><td>-128dBc/Hz</td></tr>
<tr><td>10kHz</td><td>-134dBc/Hz</td><td>-135dBc/Hz</td></tr>
<tr><td>100kHz</td><td>-136dBc/Hz</td><td>-137dBc/Hz</td></tr>
<tr><td>1MHz</td><td>-140dBc/Hz</td><td>-140dBc/Hz</td></tr>
<tr><td>10MHz</td><td>-152dBc/Hz</td><td>-154dBc/Hz</td></tr>
</table>
</td></tr>
<tr><td>Residual FM</td><td>≤(0.25 Hz x N) p-p, (10Hz resolution bandwidth, 10Hz video bandwidth, the rated value within 20ms
N is the number of frequency multiple times of LO)</td></tr>
<tr><td>Displayed Average Noise Level (the input end is</td><td>S4082V-B (Without Pre-amplifier)
Frequency Range Specification Typical</td></tr>
</table>

connected to match load, sample or average wave detection, the average type is logarithm, 0dBinput attenuation, RF gain takes the DANL as the priority, Normalized to 1Hz, 20°C ~ 30°C)	10MHz ≤ f ≤100MHz	-149dBm	-151dBm
	100MHz <f ≤1.2GHz	-152dBm	-154dBm
	1.2GHz <f ≤2.2GHz	-151dBm	-153dBm
	2.2GHz <f ≤3.25GHz	-150dBm	-153dBm
	3.25GHz<f ≤ 5.25GHz	-148dBm	-150dBm
	5.25GHz <f ≤ 6.5GHz	-144dBm	-148dBm
	6.5GHz <f ≤ 8.4GHz	-142dBm	-145dBm
	S4082V-B (Pre-amplifier ON)		
	Frequency Range	**Specification**	**Typical**
	10MHz ≤ f ≤100MHz	-156dBm	-158dBm
	100MHz <f ≤ 3.25GHz	-161dBm	-163dBm
	3.25GHz < f ≤ 5.25GHz	-160dBm	-162dBm
	5.25GHz < f ≤ 8.4GHz	-156dBm	-159dBm
	S4082V-D/E/F/H (Without Pre-amplifier)		
	Frequency Range	**Specification**	**Typical**
	10MHz ≤ f ≤100MHz	-147dBm	-150dBm
	100MHz <f ≤1.2GHz	-154dBm	-155dBm
	1.2GHz <f ≤2.2GHz	-150dBm	-152dBm
	2.2GHz <f ≤3.25GHz	-148dBm	-150dBm
	3.25GHz <f ≤ 5.25GHz	-145dBm	-148dBm
	5.25GHz <f ≤ 6.5GHz	-142dBm	-147dBm
	6.5GHz <f ≤ 8.2GHz	-140dBm	-143dBm
	8.2GHz <f ≤18GHz	-143dBm	-145dBm
	18GHz <f ≤26.5GHz	-137dBm	-141dBm
	26.5GHz <f ≤40GHz	-130dBm	-133dBm
	40GHz <f ≤50GHz	-127dBm	-129dBm
	S4082V-D/E/F/H (Pre-amplifier ON)		
	Frequency Range	**Specification**	**Typical**
	10MHz ≤ f ≤100MHz	-155dBm	-158dBm
	100MHz <f ≤ 3.25GHz	-162dBm	-164dBm
	3.25GHz < f ≤ 5.25GHz	-160dBm	-163dBm
	5.25GHz < f ≤ 8.4GHz	-156dBm	-158dBm
	8.2GHz < f ≤18GHz	-157dBm	-159dBm
	18GHz < f ≤26.5GHz	-154dBm	-156dBm
	26.5GHz < f ≤40GHz	-151dBm	-153dBm
	40GHz < f ≤50GHz	-148dBm	-151dBm
	S4082V-L (Without Pre-amplifier)		
	Frequency Range	**Specification**	**Typical**
	10MHz ≤ f ≤100MHz	-147dBm	-150dBm
	100MHz <f ≤1.2GHz	-150dBm	-152dBm
	1.2GHz <f ≤2.2GHz	-149dBm	-152dBm
	2.2GHz <f ≤3.25GHz	-148dBm	-150dBm
	3.25GHz <f ≤ 5.25GHz	-145dBm	-148dBm
	5.25GHz <f ≤ 6.5GHz	-142dBm	-149dBm
	6.5GHz <f ≤ 8.2GHz	-140dBm	-143dBm
	8.2GHz <f ≤18GHz	-143dBm	-145dBm
	18GHz <f ≤26.5GHz	-137dBm	-141dBm
	26.5GHz <f ≤40GHz	-130dBm	-133dBm
	40GHz <f ≤50GHz	-127dBm	-129dBm
	50GHz <f ≤54.8GHz	-135dBm	-139dBm
	54.8GHz <f ≤63.6GHz	-133dBm	-137dBm

<table>
<tr><td></td><td>48GHz <f ≤67GHz ±3.50dB ±2.50dB</td></tr>
<tr><td></td><td>Absolute Amplitude Accuracy
Absolute amplitude accuracy (10 dB attenuation, 20°C ~ 30°C, 1 Hz ≤resolution bandwidth≤ 1 MHz, input signal -10 to -50 dBm):
±0.24dB 500MHz
± (0.24dB+frequency response) all frequency except 500MHz</td></tr>
<tr><td>1dB Gain Compression (mixer level, dual-tone test, resolution bandwidth is 5kHz, 3MHz frequency interval, 20°C ~ 30°C)</td><td>S4082V-B
Frequency range Mixer Input Level Typical
10MHz ≤ f ≤100MHz +14dBm +16dBm
100MHz <f ≤ 3.25GHz +18dBm +20dBm
3.25GHz <f ≤ 5.25GHz +18dBm +20dBm
5.25GHz <f ≤ 8.4GHz +17dBm +19dBm
S4082V-D/E/F/H/
Frequency range Mixer Input Level Typical
20MHz ≤ f ≤3.25GHz ≥+5dBm ≥+10dBm
3.25GHz <f ≤50GHz ≥+7dBm ≥+11dBm
S4082V-L/N/P
Frequency range Mixer Input Level Typical
20MHz≤ f ≤5.25GHz ≥+5dBm ≥+10dBm
5.25GHz <f ≤ 8.2GHz ≥+7dBm ≥+11dBm
8.2GHz <f ≤ 67GHz ≥+6dBm ≥+11dBm
67GHz <f ≤ 90GHz ≥-3dBm /
90GHz <f ≤ 110GHz ≥-1dBm /</td></tr>
<tr><td>TOI distortion (input mixer 2 -10dBm signal test, frequency interval is 50kHz, 20°C ~ 30°C)</td><td>S4082V-B
Frequency Range Specification Typical
10MHz ≤ f ≤100MHz +14dBm +16dBm
100MHz <f ≤ 3.25GHz +18dBm +20dBm
3.25GHz <f ≤ 5.25GHz +18dBm +20dBm
5.25GHz f ≤ 8.4GHz +17dBm +19dBm
S4082V-D/E/F/H/L/N/P
Frequency Range Specification Typical
10MHz ≤ f ≤100MHz +14dBm +16dBm
100MHz <f ≤ 3.25GHz +18dBm +20dBm
3.25GHz <f ≤ 5.25GHz +20dBm +23dBm
5.25GHz <f ≤ 8.2GHz +21dBm +23dBm
8.2GHz <f ≤50GHz +18dBm +20dBm
50GHz <f ≤67GHz +18dBm +20dBm</td></tr>
<tr><td>Residual response (the input end is connected to match load, 0dB attenuation)</td><td>≤-98dBm 1MHz ≤ f ≤8GHz RF Port 1</td></tr>
<tr><td>IQ Data</td><td>Memory depth (IQ length): 500M IQ samples
IQ bits length: 32 bit I,32 bit Q(Analysis bandwidth ≤40MHz)
Memory depth (IQ length): 1000M IQ samples
IQ bits length: 16 bit I, 16 bit Q(Analysis bandwidth>40MHz)</td></tr>
<tr><td>Dimensions</td><td>W (mm)×H (mm)×D (mm):
(426±4) mm ×(222±4) mm ×(450±4) mm(excluding handle, foot-pad, bottom feet)</td></tr>
<tr><td>Weight</td><td>About 35kg (different configuration have different weights)</td></tr>
<tr><td>Power supply</td><td>AC 100 to 240V:50 to 60Hz</td></tr>
<tr><td>Power Consumption</td><td>Maximum 450W(Standard configureation)</td></tr>
<tr><td>Maximum input power</td><td>+ 30 dBm (1 W)</td></tr>
<tr><td>Temperature Range</td><td>Operating temperature:0°C~+50°C
Storage temperature:-40°C~+70°C</td></tr>
</table>

Humidity	80% or better (non-condensing)

Notes:

1. Rated values refer to the estimated performance, or the performance which is useful for the product beyond the warrant range.

2. Typical value refers to other performance information beyond the product guarantee range; when the performance is over the technical index, 80% of the samples will present 95% confidence within 20°C ~ 30°C temperature range; typical performance excludes test uncertainty.

S4082V-H34-67	Low-noise preamplifier	The preamplifier is selected according to the frequency upper limit of the signal analyzer. Example: S4082L frequency upper limit is 50GHz,Pre-amplifier need to select option H34-67.
S4082V-H34A-08	Low-noise preamplifier	Only S4082B mainframe can be configured, and S4082-H34-08 is not optional at the same time.
S4082V-H36	Pre-selector Bypass	The tracking pre-selector in the bypass receiving channel.
S4082V-H38-40	40MHz Analysis bandwidth	Support 10Hz to 40MHz Analysis bandwidth
S4082V-H38-200	200MHz Analysis bandwidth	Support 10Hz to 200MHz Analysis bandwidth
S4082V-H38-400	400MHz Analysis bandwidth	Support 10Hz to 400MHz Analysis bandwidth
S4082V-H38-600	600MHz Analysis bandwidth	Support 10Hz to 600MHz Analysis bandwidth
S4082V-H38-1200	1.2GHz Analysis bandwidth	Support 10Hz to 1.2GHz Analysis bandwidth
S4082V-H38-2000	2GHz Analysis bandwidth	Support 10Hz to 2GHz Analysis bandwidth
S4082V-H40	External frequency extender	To extend the frequency range using external frequency mixing method. This option provides LO output and IF input, as well as signal recognition ability. (Notes: this option can be selected when the main unit is not S4052B: the extended frequency range depends on the selected extension modules; the frequency extension module needs to buy additionally)
S4082V-H41-200	Real-time spectrum analysis	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 200MHz bandwidth,
S4082V-H41-400	Real-time spectrum analysis	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 400MHz bandwidth.
S4082V-H41-600	Real-time spectrum analysis	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 600MHz bandwidth.
S4082V-H41-1200	Real-time spectrum analysis	This option provides digital phosphor spectrum and seamless waterfall, including frequency template trigger, which can support real-time spectrum analysis of 1.2GHz bandwidth.
S4082V-H48	Noise figure analysis	Provide noise source drive and noise figure measurement function. S4082N/P only support maximum 67GHz noise figure measurement.(note: the option need to select H34 low-noise pre-amplifier option and corresponding 1660X noise source to finish the noise figure measurement.)
S4082V-H96	User manual (paper publication)	Provide a detailed user manual in hard copy
S4082V-H97	Mounting rack	handles and accessories for S4052 mounting on standard racks
S4082V-H99	Aluminum transportation case	High-strength lightweight aluminum transportation case, with handle and roller, convenient for transportation
S4082V-S02	Noise power ratio measurement	Provide noise power ratio parameters measurement
S4082V-S04	Phase noise measurement	SSB phase noise curves and single-point phase

		noise measurement
S4082V-S05	EMC Pre-Compliance	Provide EMC pre-compliance measurement function
S4082V-S10	Transient analyzer	To realize the measurement & analysis of transient parameters, spectrum, and time-varying characteristics of signals, support playback of the recorded data.
S4082V-S12	Vector signal analyzer	This option provides flexible demodulation functions of multiple single-carrier digital modulation signals. It can provide vector charts, constellation diagrams, eye diagrams, spectrum diagrams, etc., to analyze the characteristics of the modulation signal. The modulation error of the signal can be obtained by demodulation, which helps to judge the cause of the signal error.
S4082V-S13	Pulse signal analyzer	Automatic measurement on time, level and modulation parameters of pulse waveform and statistical analysis of pulse sequence
S4082V-S16	Multicarrier group delay measurement	Provides absolute and relative group delay measurement capability for wideband signals
S4082V-S40	WLAN 802.11a/b/g measurement	Broadband wireless local area network protocol physical layer test (802.11a/ b/g), covering radio frequency, modulation analysis, and modulation quality testing.
S4082V-S40N	WLAN 802.11n measurement	Broadband wireless local area network protocol physical layer test (802.11n), covering radio frequency, modulation analysis, and modulation quality testing.
S4082V-S40AC	WLAN 802.11ac measurement	Broadband wireless local area network protocol physical layer test (802.11ac), covering radio frequency, modulation analysis, and modulation quality testing.
S4082V-S40AX	WLAN 802.11ax measurement	Broadband wireless local area network protocol physical layer test (802.11ax), covering radio frequency, modulation analysis, and modulation quality testing.
S4082V-S41D	LTE/LTE-A : TDD downlink signal analysis	support downlink signal modulation analysis; support modulation analysis of each subframe configuration type of TDD; support custom parameter configuration modulation analysis; support downlink E-TM mask modulation analysis; support EVM, switching power, frequency error, power and other parameter measurements; provides view outputs such as capture storage, power spectral density, constellation diagrams, result summary tables, EVM vs. carriers, and more.
S4082V-S41U	LTE/LTE-A: TDD uplink signal analysis	support upstream signal modulation analysis, support custom parameter configuration modulation analysis; support EVM, frequency error, power and other parameter measurements; provides view outputs such as capture storage, power spectral density, constellation diagrams, result summary tables, EVM vs. carriers, and