SALUKI TECHNOLOGY

S4042 Series Spectrum Analyzer

(9kHz to 9GHz/20GHz)

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S4042 Product Overiew

The Saluki S4042 series spectrum analyzer is a new basic spectrum analyzer launched by Saluki, which covers the frequency measurement range of 9kHz~20GHz. The S4042 series spectrum analyzer adopts porable structure, weighs less than 6.5kg, and has multiple advantages such as wide operating band, excellent perormance indicators, fast sweep, multiple testing functions, porability and easy operation.

The S4042 series spectrum analyzer has such measurement function modes as real-time spectrum analysis, intererence analysis,channel sweep, field strength measurement, USB continuous wave and peak power measurement, and analog demodulation analysis, IQ analysis, as well as such intelligent measurement functions as channel power, occupied bandwidth, adjacent channel power, spectrum emission mask, carrier-to-noise ratio, harmonic distorion and stray emission mask, and suppors such digitalinteraces as LAN, USB and HDMI. The 12.1-inch multi-touch capacitive touch screen adopted by S4024 brings better interactiveexperience,and the product can be applied to the research and development and testing process of industrial electronic products, as well as many fields such as communication testing , satellite communication, microwave communication, scientifc research and teaching.

Main Features

- **Frequency measurement range**

9kHz~9GHz/20GHz, standard full-band preamplifier

- **RF performance specifications**

DANL: -163dBm/Hz (10MHz~2GHz, preamplifier ON, Typical)

SSB Phase Noise: ≤-113dBc/Hz@100kHz offset @1GHz carrier (Typical) ≤-108dBc/Hz@100kHz offset@10GHz carrier(Typical)

TOI: +16dBm@900MHz (Typical)

Absolute Amplitude Accuracy: ± 1.0dB (Typical)

- **Fast Sweep Speed**

Sweep time <33ms (span 20GHz, resolution bandwidth 3MHz)

Sweep time<4s (span 1GHz, resolution bandwidth 1kHz, Fast FFT sweep mode)

- **Multiple measurement function modes**

Spectrum analysis, interference analysis (waterfall plot, RSSI), channel sweep, field intensity measurement, USB continuous wave power measurement, USB peak power measurement, analog demodulation analysis (AM, FM, PM), real-time spectrum analysis (maximum analysis bandwidth 40MHz), IQ analysis, time gate sweep, etc.

- **Multiple intelligent measurement functions**

Channel power, occupied bandwidth, adjacent channel power, spectrum emission template, carrier-to-noise ratio, harmonic distortion, stray emission template,

- **Various auxiliary test interfaces and digital interfaces**

10MHz reference input and output, zero span IF output, LAN, USB, HDMI, etc

- **Convenient and quick user operation experience**

12.1-inch capacitive touch screen, supporting multi-touch, with 6 independent markers, supporting signal tracking and peak tracking, with 3 display traces, 6 detection methods (standard, positive peak, negative peak, sampling, mean, root mean square), and supporting HDMI output

- **Support a variety of external options and accessories**

such as USB continuous wave power probe, USB peak power probe, EMI near field probe, etc.

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CONTENT

Rich measurement function modes and options	4-9
Comprehensive intelligent measurement functions	10-11
Technical Secification	12-13
Ordering Information	14-15

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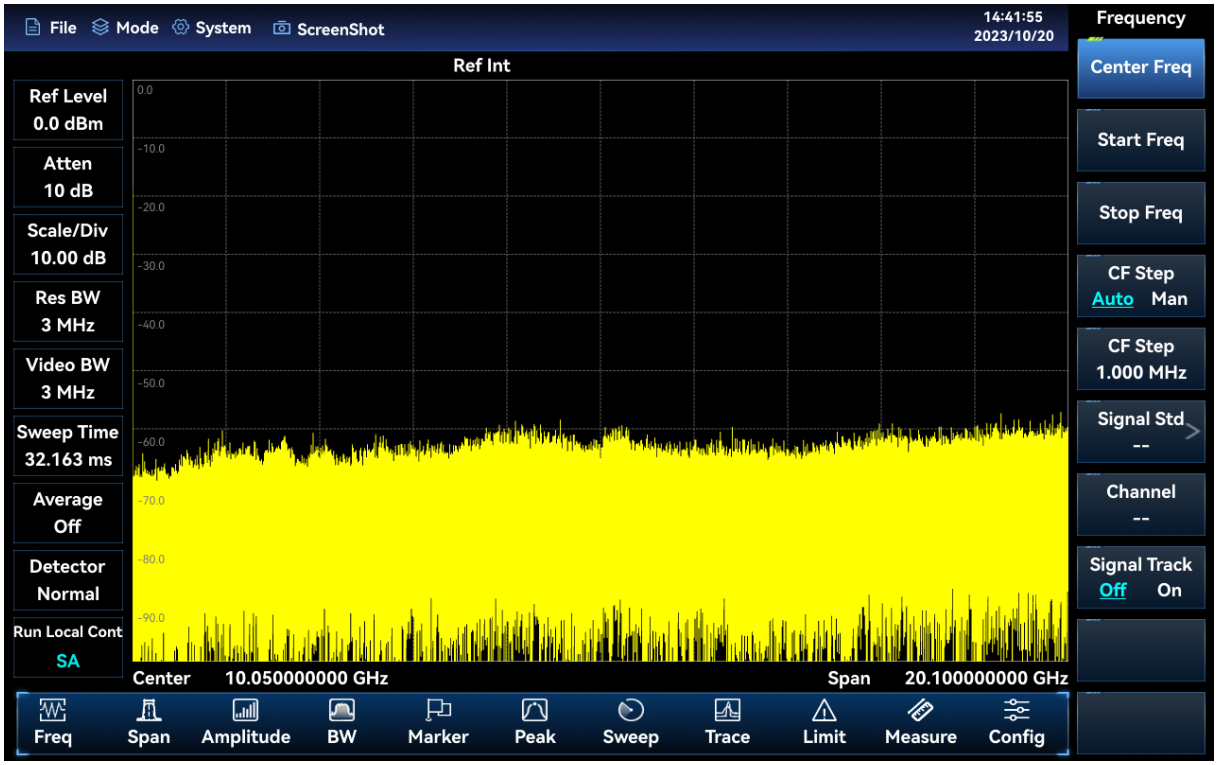
Rich measurement function modes and options

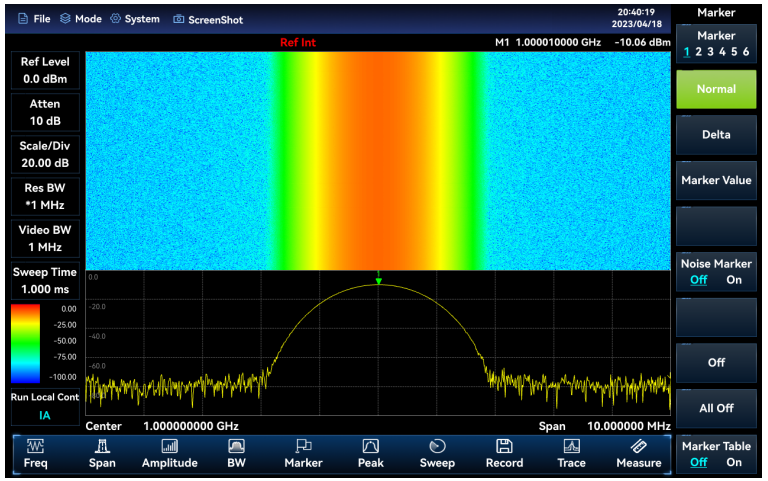
Spectrum Analysis Mode

The S4042 series spectrum analyzer has such test functions as channel power, occupied bandwidth, adjacent channel power, spectrum emission template, carrier-to-noise ratio, audio demodulation, harmonic distortion, spectrum emission template and multi-carrier adjacent channel power, supports noise marker and frequency counter functions, and can display 3 tracks at the same time, with different detection methods including standard, positive peak, negative peak, sampling, mean and root mean square, supporting signal tracking and peak tracking functions.



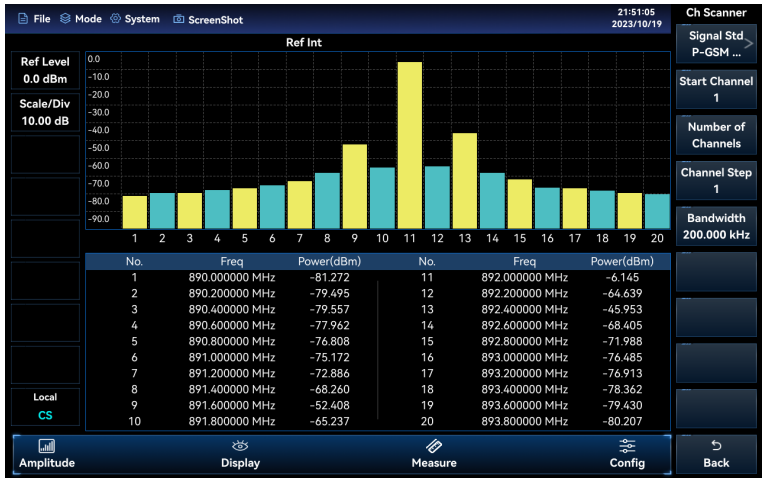
Interference Analysis (option)

The interference analysis option has the functions of spectrum measurement, waterfall plot and RSSI measurement. The waterfall plot uses the frequency-amplitude-time three-dimensional display mode, which can conveniently observe periodic or intermittent signals. The different colors displayed in the waterfall plot reflect the strength of signal amplitude. RSSI (received signal strength indicator) is mainly used to measure the intensity change of a point frequency signal in a period of time. Both waterfall plot and RSSI measurement support the automatic storage of signals.



Channel Sweep (option)

The channel sweep measurement mode offers signal power measurement for multiple channels. The signal power is displayed in the form of bar graph or list, and the signal power of 20 channels can be measured at most. According to the channel setting method, it is divided into three measurement methods: channel sweep, frequency sweep, and list sweep. The bandwidth and number of channels can be set in all of the three measurement methods.



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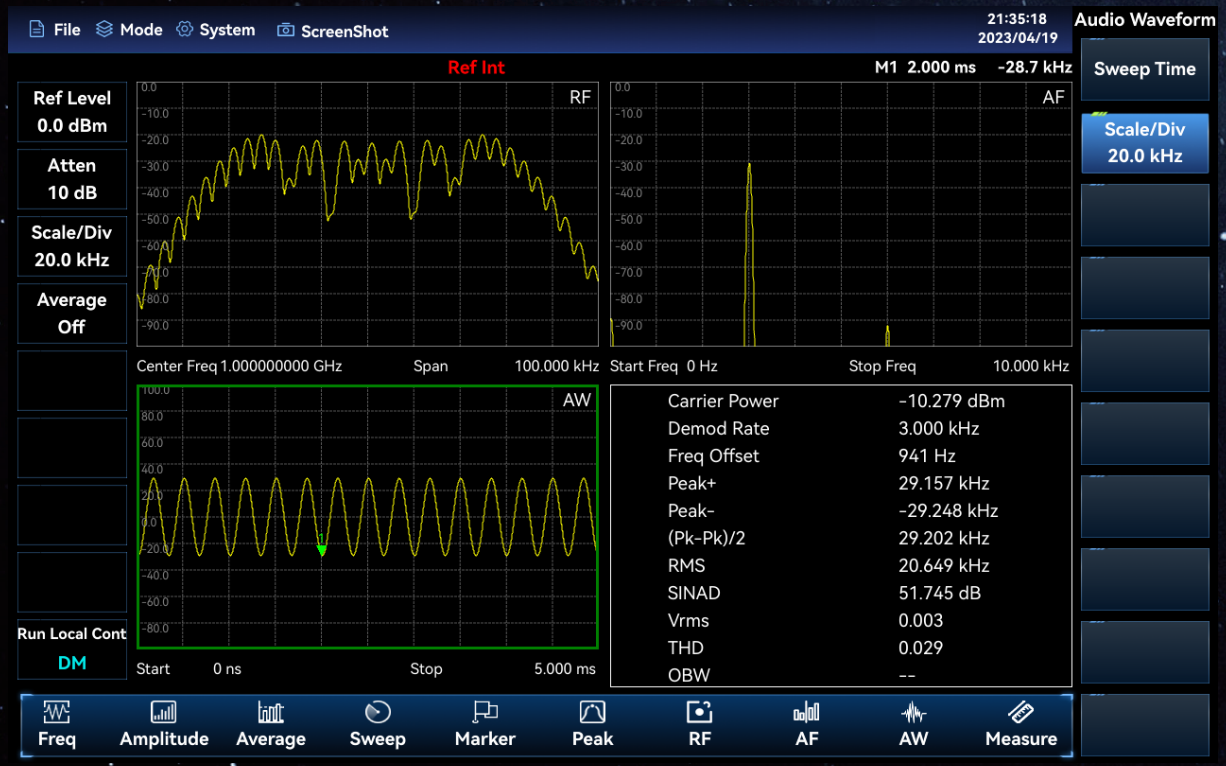
Analog Demodulation Analysis (option)

The demodulation analysis measurement mode provides the display of AM, FM and PM signal spectra and the analysis of related parameters. The main spectra and related parameters are measured as follows:

RF spectrum: similar to the spectrum analysis mode, displaying the spectrum of the modulated signal and measuring the occupied bandwidth.AM spectrum: showing the spectrum of the demodulated audio signal.

Audio waveform: showing the waveform of the demodulated audio signal in the time domain.

Parameter analysis: measuring and analyzing parameters of the modulated signal including carrier power, modulation rate, carrier frequency offset, modulation depth (AM), modulation frequency offset (FM), modulation phase offset (PM), signal-to-noise ratio, modulation distortion and total harmonic distortion.

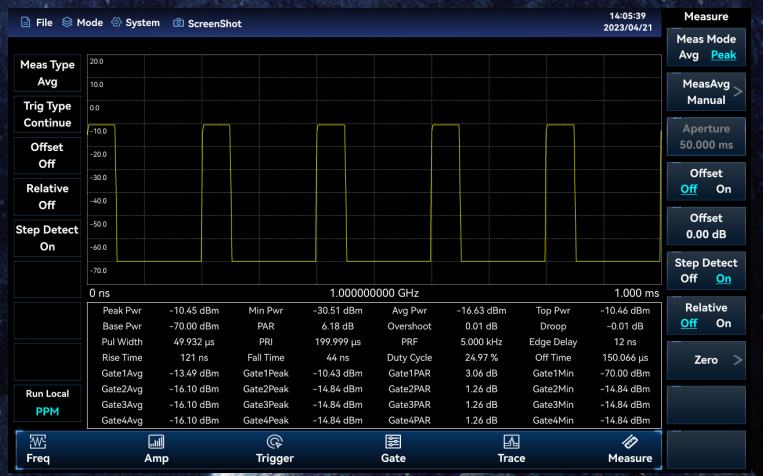


USB Power Measurement (option)

With the external USB power sensorof the Saluki S87230/87231/84232/87233 series, S87235 Series USB average power sensor, the USB power measurement function can be used to measure CW signal power of up to 40GHz.

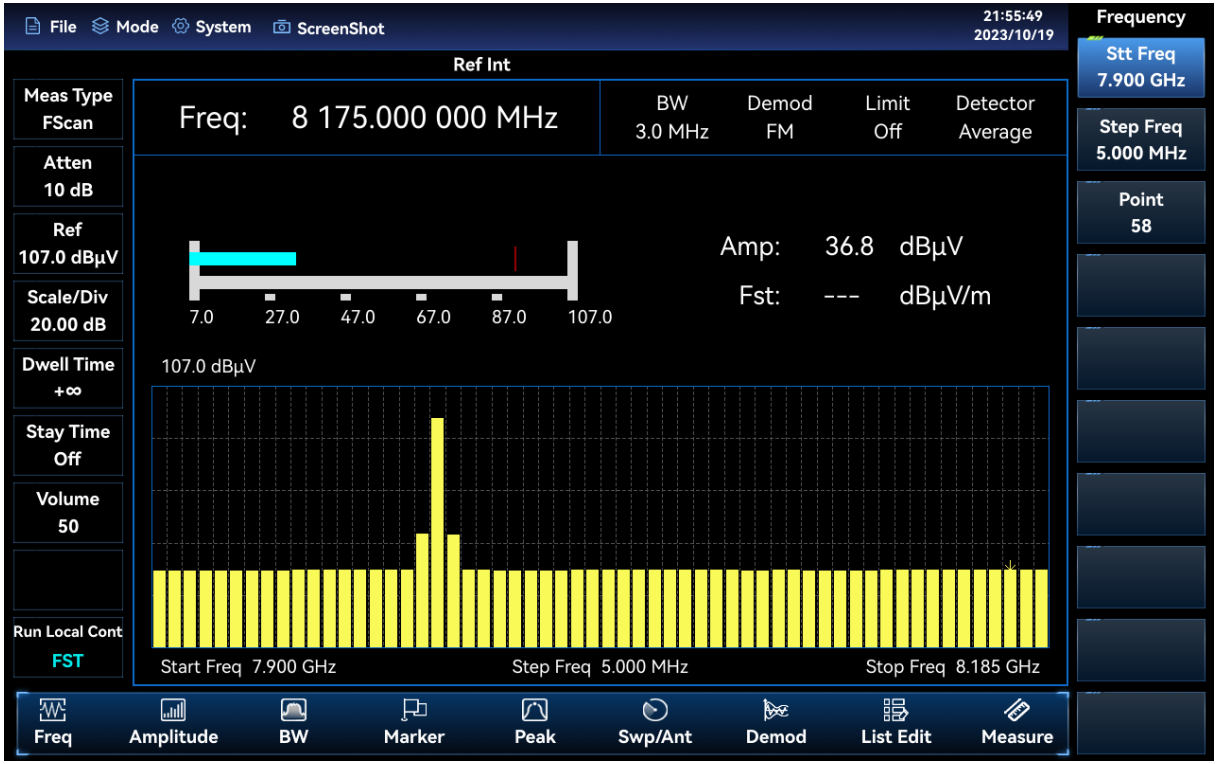
USB Peak Power Measurement (option)

By connecting to the Saluki S87234D/E/F/L USB peak power sensorvia the USB interface, this function can be used to test RF/microwave signals up to 67GHz, enabling pulse power measurement in a large dynamic range.



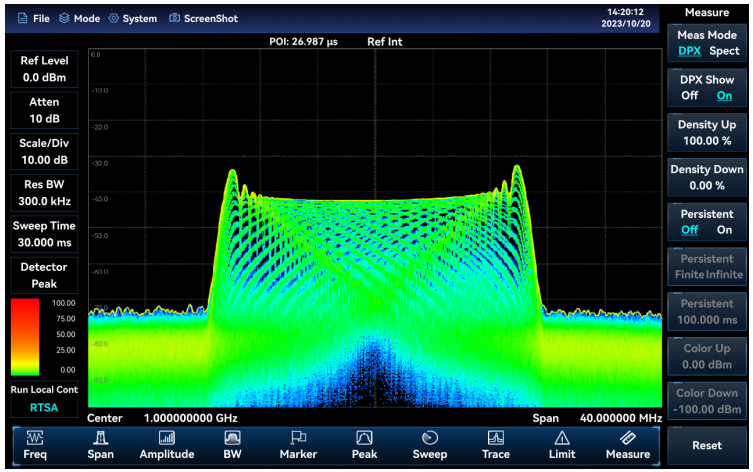
Field Strength Measurement (option)

Field strength measurement can be divided into three modes: point frequency measurement, frequency sweep measurement and list sweep measurement. Whereas, the point frequency measurement can be used to observe the frequency offset, amplitude value and field strength value of the current point by setting the point frequency rate. By setting the initial frequency, step frequency and sweep points, the amplitude and field strength changes in a frequency range can be observed. List sweep measurements can be used to observe amplitude values and field strength values at list frequency points by calling a pre-edited or saved list.



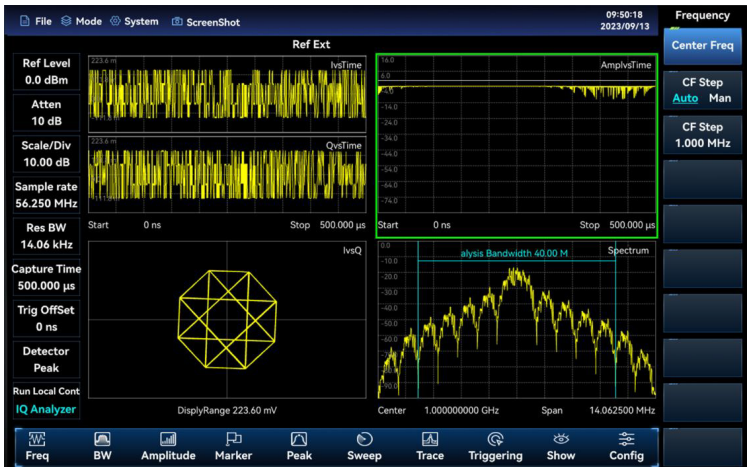
40MHz Real-time Spectrum Analysis Bandwidth (option)

The real-time spectrum analysis function is mainly used for the capture and analysis of transient time-varying signals and burst signals. The real-time analysis bandwidth is up to 40MHz, which can realize the digital afterglow and waterfall plot measurement function of transient signals.



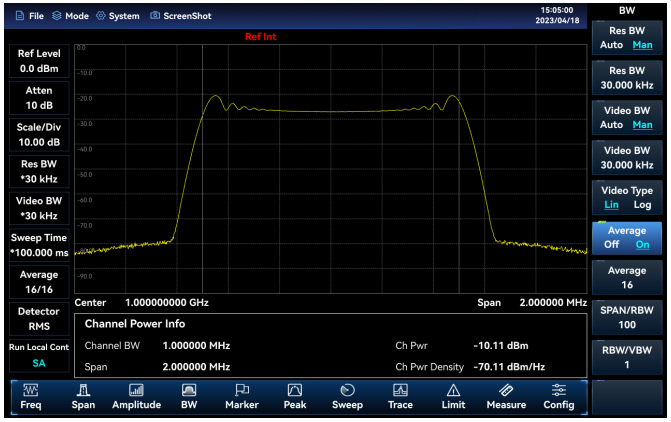
IQ Analysis (option)

The IQ analysis option supports the capture and display of IQ data as well as graphical display interfaces such as IQvs time, amplitude vs time, spectrogram and I vs Q.

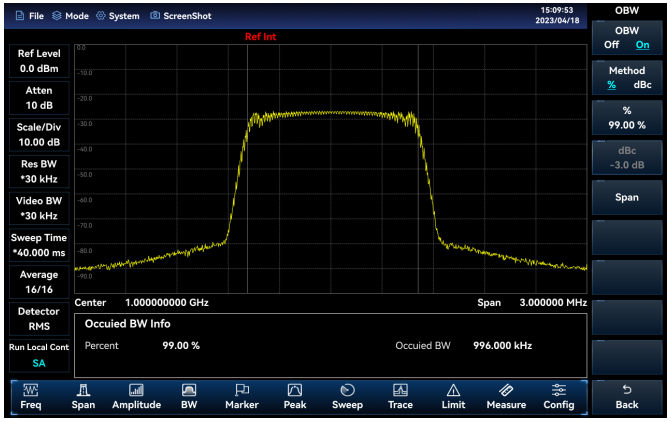


Comprehensive intelligent measurement functions

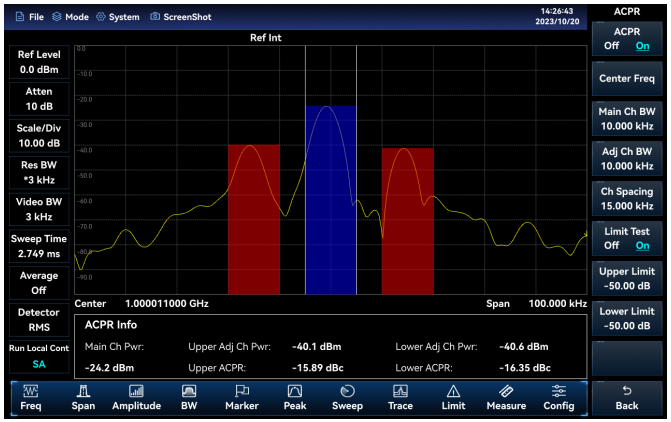
- Channel Power



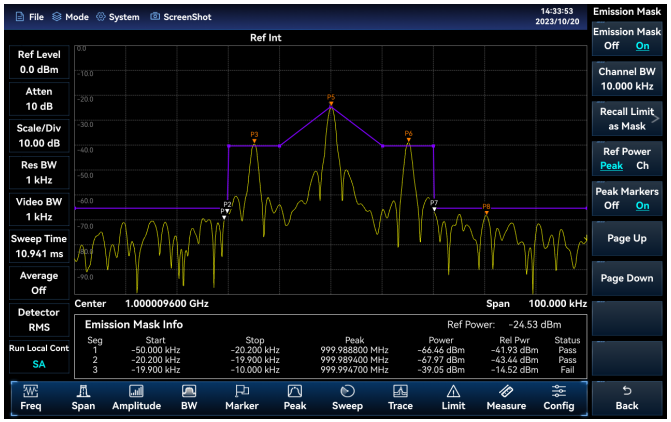
- OBW

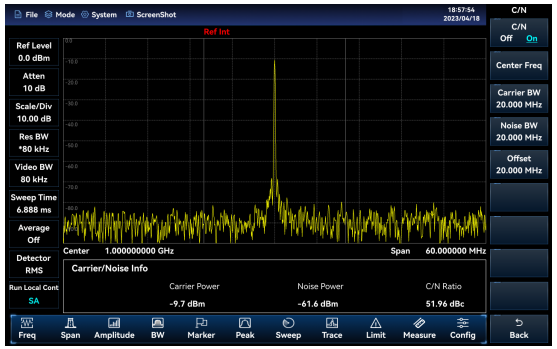


- Adjacent Channel Power

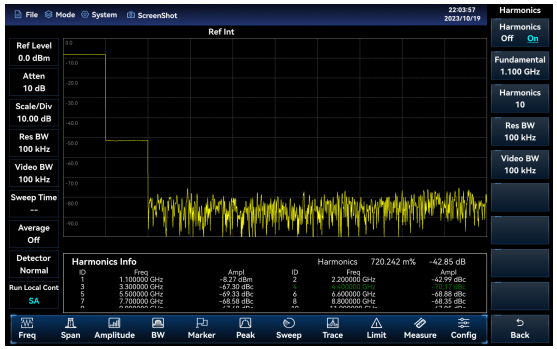


- Spectrum Emission Mask

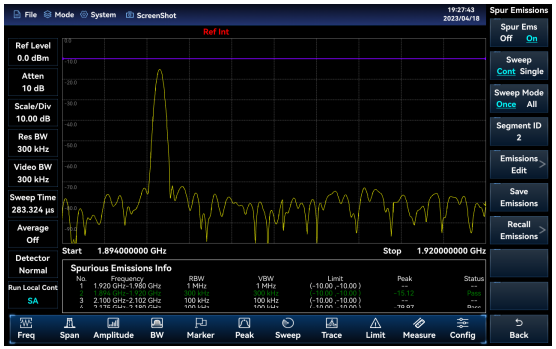




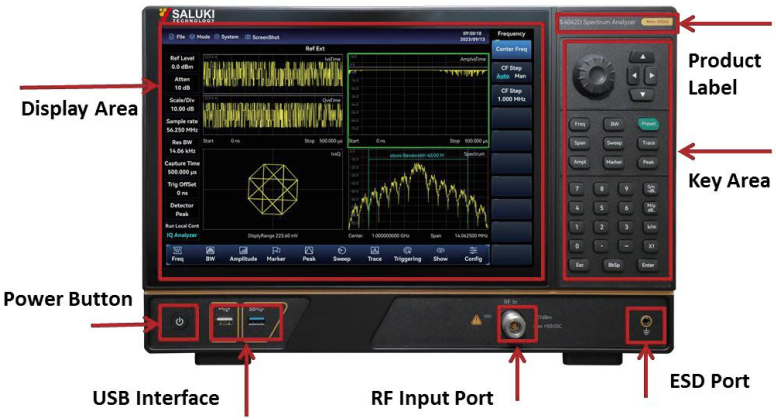
Carrier-to-Noise Ratio

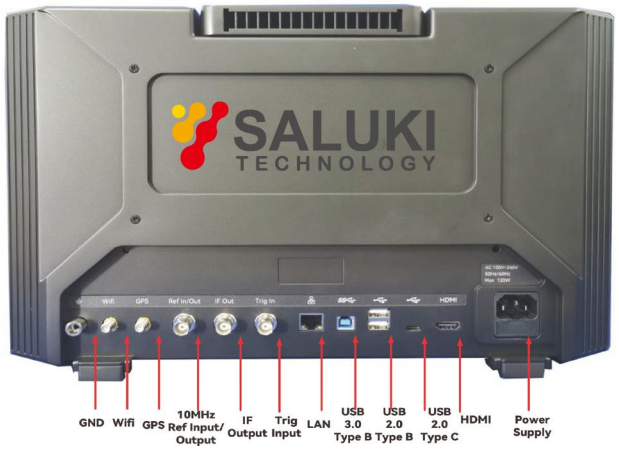


Harmonic Distortion



Spurious Emission Mask





Overall RF and Auxiliary Interfaces

Technical Secification

Model	S4042B/D	
Frequency range	S4042B: 9kHz~9GHz S4042D: 9kHz~20GHz	
Frequency reference	Nominal frequency: 10MHz Aging rate: ±5×10^{-7}/year Initial frequency accuracy: ±3×10^{-7} Temperature stability: ±1×10^{-7}(0℃ ~ +50℃, relative to 25℃±10℃) Frequency reference error:±(to last calibration date × aging rate + temperature stability + calibration accuracy) **Note: By default, the time until the last calibration is 1 year. This indicator is guaranteed by the crystal oscillator manufacturer.**	
Sweep Time	Range: 1μs-6000s (zero span) Accuracy: ±1.0% (zero span)	
Frequency Readout Accuracy	±(frequency reading × frequency reference error + 1% × span + 10% × resolution bandwidth)	
Frequency Span	Range: 0Hz (zero sweep width), 10Hz - upper limit of frequency range Accuracy: ±1.0%	
RBW	Bandwidth range: 1Hz~20MHz (1-2-3-5-8 steps)	
VBW	Bandwidth range: 1Hz~20MHz (1-2-3-5-8 steps)	
SSB Phase Noise (Carrier 1GHz, +15℃~ 35℃)	≤-108dBc/Hz@10kHz, ≤-110dBc/Hz@100kHz ≤-118dBc/Hz@1MHz, ≤-129dBc/Hz@10MHz	
Displayed Average Noise Level (50Ω load connected at input, 0dB input attenuation, average detector, RBW normalized to 1Hz, +15℃~+35℃)	Preamplifier ON: ≤-161dBm(2MHz~2.4GHz), ≤-160dBm(2.4GHz~6GHz), ≤-159dBm (6GHz~9GHz), ≤-158dBm (9GHz~14GHz), ≤-156dBm (14GHz~20GHz)	Preamplifier OFF ≤-142dBm(2MHz~2.4GHz), ≤-141dBm(2.4GHz~6GHz), ≤-140dBm (6GHz~9GHz), ≤-138dBm (9GHz~14GHz), ≤-138dBm (14GHz~20GHz)

Absolute Amplitude Accuracy(Frequency 10MHz~20GHz, attenuation 10dB, 0 dBm~-50 dBm,preamplifier OFF, RBW 1kHz, other parameters automatic)	±1.30 dB (working temperature: +15℃~+35℃)	
Input Attenuator	Attenuation range 0dB-30dB, 2dB step	
Maximum Input Level	+27dBm CW (input) frequency ≥50 MHz, attenuation ≥ 10dB , preamplifier OFF)	
Reference Level	Range: -150 dBm ~ +30 dBm, min step 1dB Conversion error: ±0.50dB (reference level 0 dBm~-60 dBm)	
Detector Type	Normal, PosP, NegP, Smp, Avg, Rms.	
Dimensions	377mm (W) ×250mm (H) ×119.5mm (D) (the padding block is closed, without protrusions such as handles, rotary pulse generators and adapters)	
Weight	≤6.5kg	
Working Temperature	0℃~+50℃	
Storage Temperature	-40℃~+70℃	
Electromagnetic Compatibility	Complies with relevant requirements of 3.9.1 in GJB 3947A-2009	
Power Supply	100~120VAC, 50~60Hz; or 200~240VAC, 50~60Hz	
Power Consumption	≤55W	
Test Interface	RF input: N-type female connector	
Other Interfaces	10MHz reference input/output: BNC female External trigger input interface: BNC female GPS antenna interface: SMA female (option, reserved) IF output interface output: BNC female (option) Wi-Fi antenna interface: SMA female (option, reserved)	
Communication and Auxiliary Interfaces	Front panel: 1 USB3.0 A-type interface, 1 USB2.0 A-type interface	Rear panel: 2 USB2.0 A-type interfaces, 1 USB3.0 B-type interface (reserved) 1 USB 2.0 C-type interface, LAN interface: standard RJ-45 type 1 HDMI interface

Ordering Information

•Main Unit:

S4042B spectrum analyzer (9kHz-9GHz)

S4042D spectrum analyzer (9kHz-20GHz)

•Option:

No.	Option No.	Description	Function
1	S4042-002	User' Manual (Chinese version)	User' Manual (Chinese version).
2	S4042-004	Programming Manual (Chinese version)	Programming Manual (Chinese version).
3	S4042-S01	USB Power Meter	It provides power measurement function, which can be used with an external USB CW power sensor S87230/87231/87232/87233.
4	S4042-S02	USB Peak Power Measurement	It provides peak power measurement, which can be used with the S87234D/E/F/L USB peak/average power meter.
5	S4042-S03	Interference Analyzer Option	It provides waterfall plot, RSSI measurement and other functions.
6	S4042-S04	Channel Scanner Option	It can measure the signal power of multiple channels.
7	S4042-S05	Field Strength Option	It can be used to measure the radiation strength of the electric field of the device under test.
8	S4042-S08	Analog Demodulation	It can realize the analysis and measurement of AM, FM and PM modulation signals.
9	S4042-S09	Zero Span IF Output	It outputs analog IF signal at zero span.
10	S4042-S10	Time Gated	It is used for testing the time division interference signal.
11	S4042-S12	40MHz Bandwidth Real-time Spectrum Analysis	It provides 40MHz BW real-time spectrum analysis.
12	S4042-S13	List Sweep	It enables continuous sweeping measurement of multiple frequency bands.
13	S4042-S14	IQ Analysis	Storage and display of IQ data.
14	S4042-H03	S4042 Safety Case	Safety transport case.
15	S4025-H36	PBS1 Near-field Probe	The highest working frequency is 9GHz, including one electric field probe and magnetic field probes of 6mm, 12mm, 25mm and 50mm, one each, and the interface type is SMB(m).

No.	Option No.	Description	Function
16	S87230	USB CW Power Sensor	Frequency range: 9kHz ~ 6GHz, interface type N(m).
17	S87231	USB CW Power Sensor	Frequency range: 10kHz ~ 18GHz, interface type N(m).
18	S87232	USB CW Power Sensor	Frequency range: 50kHz ~ 26.5GHz, interface type 3.5mm(m).
19	S87233	USB CW Power Sensor	Frequency range: 50MHz ~ 40GHz, interface type 2.4mm(m).
20	S87234D	USB Peak/Average Power Sensor	Frequency range: 50MHz ~ 18GHz, interface type N(m).
21	S87234E	USB Peak/Average Power Sensor	Frequency range: 50MHz ~ 26.5GHz, interface type 3.5mm(m).
22	S87234F	USB Peak/Average Power Sensor	Frequency range: 50MHz ~ 40GHz, interface type 2.4mm(m).
23	S87234L	USB Peak/Average Power Sensor	Frequency range: 500MHz ~ 67GHz, interface type 1.85mm(m).

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