

# SARP-6

## **RF SIGNAL ACQUISITION RECORDING AND PLAYBACK INSTRUMENT**

PRODUCT BROCHURE



## Introduction

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**SARP-6 RF Signal Acquisition Recording and Playback instrument** is a portable RF signal acquisition recording playback equipment. It can be used to directly acquire, record, and playback RF signal from **1MHz to 6GHz**. Its data recording and bandwidth playback can reach **500MHz**. The SARP-6 RF Signal Acquisition Recording and Playback system is composed of up and down converter module, high performance ADC and DAC, and large capacity solid-state FLASH or high performance disk. It is widely used in radar, communication, GPS, telemetry as well as many other circumstances when acquiring signal and recording it down.

## Features

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- **Visual operation interface:** 18.4-inch high-resolution screen with spectrum display, similar to the operation mode of spectrum analyzer
- **Pluggable hard disk slot:** pluggable, ultra-high read and write rate, easy to import and export data
- **Integrated RF module:** integrated pluggable RF module, 1MHz to 6GHz RF signal input and output directly
- **Continuously variable acquisition bandwidth:** from 100kHz to the highest, observe and acquire signals efficiently and accurately
- **Continuously variable playback sampling rate:** from 250kSPS to the highest, flexible playback of signal data
- **Equal-capacity dual backup system:** effectively ensure data security while ensuring efficiency
- **Powerful software functions:** with offline signal analysis, signal generation, signal synthesis software, support for digital communication signals, radar pulse signals, frequency hopping signals and other types of signal analysis and generation, as well as the synthesis and playback of ideal signals and stored signals
- **Support system power calibration function:** can import system S-parameter data, automatically compensate system gain error
- **Support multi-file uninterrupted continuous playback:** multiple data files can be selected for uninterrupted continuous output according to the specified order and cycle times
- **Support remote control:** standard SCPI command, support Socket command transmission mode

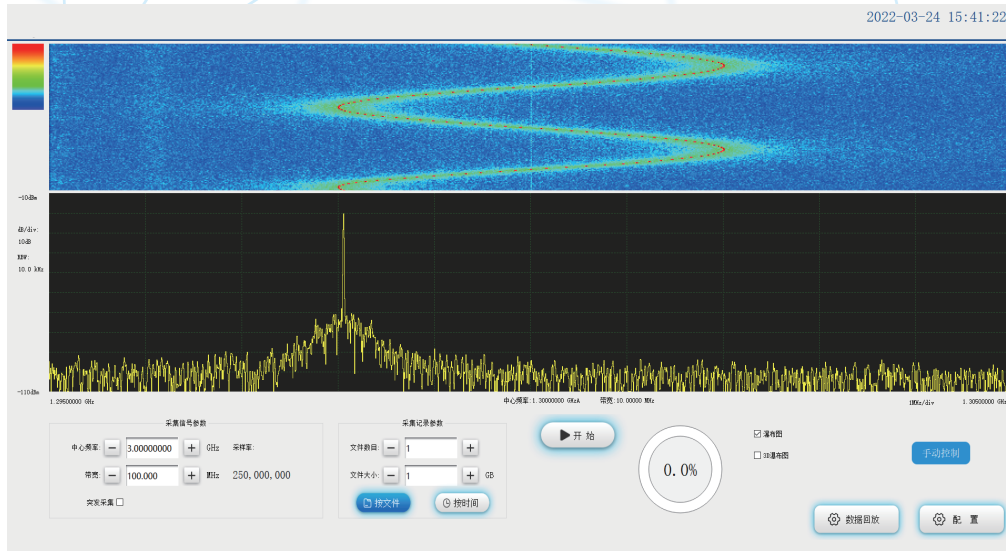
## Applications

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- Interference Analysis
- Surveillance
- Spectrum Management
- Satellite Communications
- Radar
- Complex electromagnetic environment test
- Electronic countermeasures training simulation platform



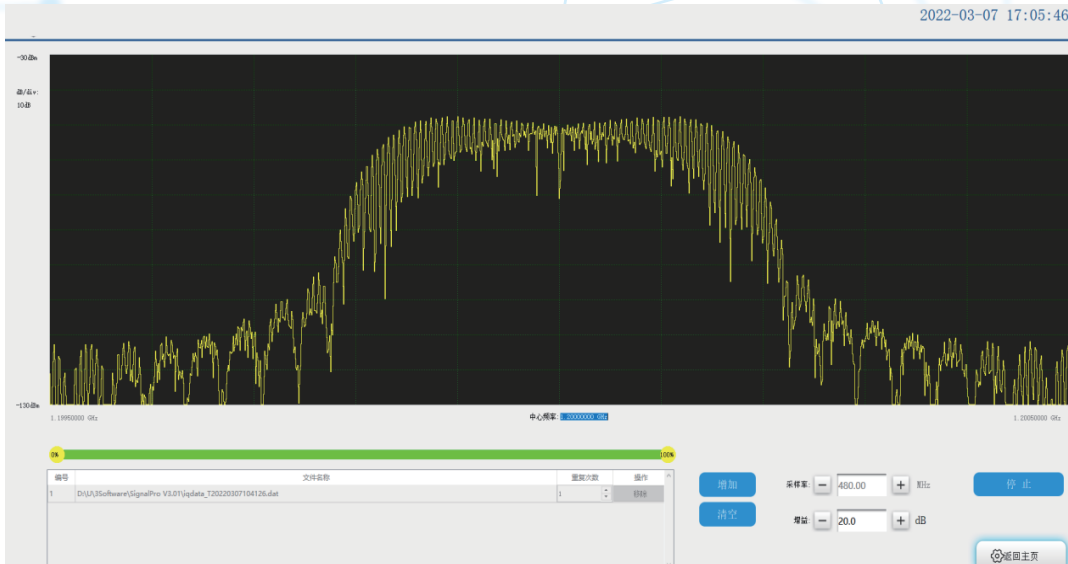
# Data Acquisition



Acquisition interface of SARP-6 instrument

Frequency Parameters	Frequency range		1MHz - 6GHz, or IF input
	Analysis bandwidth	Maximum bandwidth	Option B500: 500MHz Option B200: 200MHz Option B100: 100MHz Option B50: 50MHz
		Maximum bandwidth & CF	1MHz-300MHz: $\pm 32\%$ carrier frequency and max. bandwidth, whichever is smaller 300MHz-6GHz: $\pm 40\%$ carrier frequency and max. bandwidth, whichever is smaller
		Minimum bandwidth	100kHz
RBW range		1e-3 to 1e-5 of analysis bandwidth	
Amplitude Parameters	Amplitude range	Measurement range	-110dBm to 0dBm
		Input gain	0 to 40dB, 0.5dB step
	Display range	Logarithmic coordinate	1 to 20dB/div, 1dB step
	Power accuracy	1MHz - 6GHz	$\pm 1.5$ dB
	Reference level range		-100 to 0dBm, 1dB step
In-band flatness		<3dB@maximum bandwidth <1dB@100M bandwidth	
Spectral Purity	Noise power spectral density	1MHz - 500MHz	$\leq -145$ dBm/Hz, $-150$ dBm/Hz (typ)
		500MHz - 3GHz	$\leq -140$ dBm/Hz, $-145$ dBm/Hz (typ)
		3GHz - 6GHz	$\leq -135$ dBm/Hz, $-140$ dBm/Hz (typ)
	Image rejection ratio		$\leq -55$ dBc, $-60$ dBc (typ)
Spurious Suppression Ratio		$\leq -55$ dBc, $-60$ dBc (typ)	
Data Acquisition	IQ sampling rate	Option B500	600MSPS@500MHz bandwidth
		Option B200/B100/B50	250MSPS@200MHz bandwidth 125MSPS@100MHz bandwidth 75MSPS@50MHz bandwidth
ADC resolution		14bit	
Data Storage	Minimum size	1MB	

## Data Playback



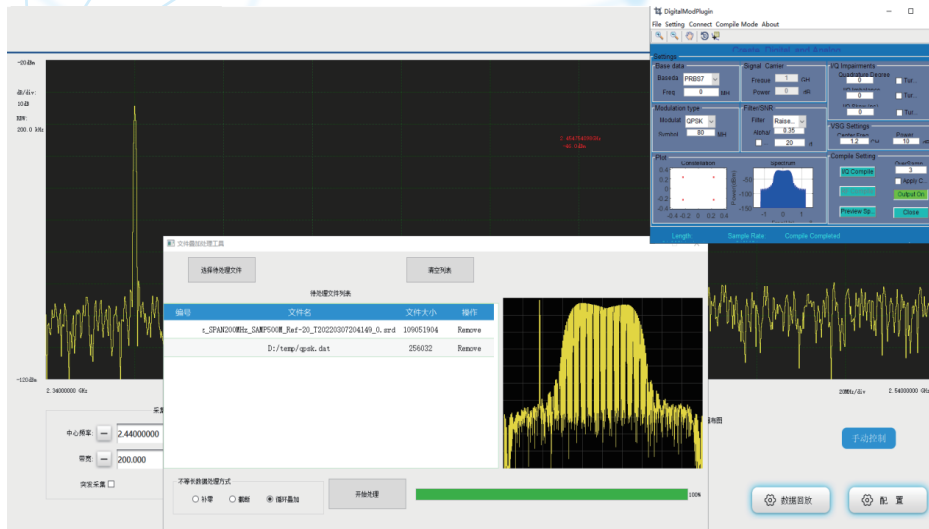
Playback interface of SARP-6 instrument

Frequency Parameters	Frequency range	1 MHz - 6GHz	
	Setting resolution	10Hz	
Amplitude Parameters	Max. output power	0dBm	
	Power resolution	0.5dB	
	Power error	Compared to acquisition, CF	$\pm 1$ dB
	In-band flatness	$< 3$ dB@maximum bandwidth $< 1$ dB@100MHz bandwidth	
Data Playback	IQ sampling rate	Option B500	600MSPS@500MHz bandwidth
		Option B200/B100/B50	250MSPS@200MHz bandwidth 125MSPS@100MHz bandwidth 75MSPS@50MHz bandwidth
	DAC resolution	16bit	



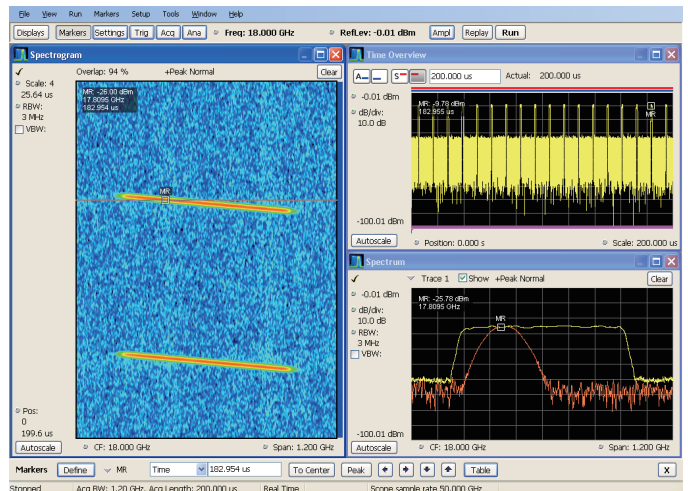
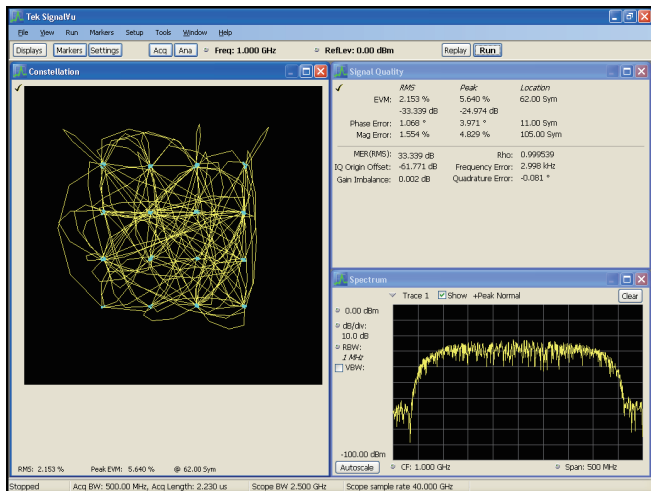
## Software

### Signal Synthesis



Signal synthesis can superimpose and combine multiple data, support the superposition of the actual data collected and the ideal data generated by the SignalPro signal generation software. And according to the length of the file, the user can choose zero-filling, truncation or cyclic repetition to fuse the ideal data with the actual collected data. A single transmitter can also be used to achieve multi-transmitter simulation function through signal synthesis.

### SignalVu-PC Signal Processing and Analysis Software



SignalVu-PC signal processing and analysis software serves as a supporting software for signal analysis in scenarios such as broadband radar, high data rate satellite links, wireless local area networks, and frequency hopping communications. SignalVu-PC supports the analysis of pulse radar amplitude, time, average open point power, peak power, average transmit power, pulse width, rise time, fall time, repetition interval (s), repetition interval (Hz), duty cycle (%), duty cycle (ratio), ripple (dB), ripple (%), fade (dB), fade (%), overshoot (dB), overshoot (%), etc.

In addition, SignalVu-PC supports Error Vector Magnitude (EVM) (RMS, Peak, EVM vs. Time), Modulation Error Ratio (MER), Amplitude Error (RMS, Peak, Amplitude Error vs. Time), Phase Error (RMS, Peak, Phase Error vs. Time), Origin Offset, Frequency Error, Gain Imbalance, Quadrature Error, Rho, Constellation Diagram, Symbol Table, etc.

## SignalPro Signal Generation Software



SignalPro software interface

With more and more signal modulation types and more complex modulation methods, it is more time-consuming for engineers to easily and accurately generate the signals required by standard tests or margin tests. Therefore, Saluki Technology provide a high-integration, full-signal type software tool that integrates RF/IF/IQ signal generation and editing and supports complex electronic environment generation—SignalPro signal generation software.

SignalPro software mainly includes general digital modulation, multi-carrier digital modulation, pulse radar, continuous wave radar, multi-target radar, multi-tone signal, Gaussian noise, single-tone signal, complex electromagnetic environment, frequency hopping signal, predistortion calibration, wireless communication and other functional units.

The software generates all kinds of complex modulation signals by filling in forms. Users do not need to understand the signal mechanism, but only need to fill in the basic parameter information of the required signal to conveniently and quickly generate the required waveform with one click. In addition, the time domain, frequency domain and modulation domain simulation results of the signal to be generated will be visually displayed on the signal generation software interface. The entire signal generation process is simple, intuitive, convenient and fast, which minimizes the work time and difficulty of testers and improves test efficiency.

## Hard Disk Capacity

Option Module	Capacity nominal	Capacity system identification	4S <sup>1</sup> M [Mz]	Sampling Rate <sup>1</sup>	Recording Rate	Recording Time
-HC16	15.36TB	13.69TB	500MHz	1200MSPS	2.4GB/s	1.6h
			250MHz	600MSPS	1.2GB/s	3.2h
			200MHz	500MSPS	1.0GB/s	3.9h
			120MHz	300MSPS	0.6GB/s	6.5h
			50MHz	150MSPS	0.3GB/s	13.0h
-HC08	7.6TB	6.98TB	500MHz	1200MSPS	2.4GB/s	0.8h
			250MHz	600MSPS	1.2GB/s	1.6h
			200MHz	500MSPS	1.0GB/s	2.0h
			120MHz	300MSPS	0.6GB/s	3.7h
			50MHz	150MSPS	0.3GB/s	6.5h
-HC04	3.75TB	3.49TB	500MHz	1200MSPS	2.4GB/s	0.4h
			250MHz	600MSPS	1.2GB/s	0.8h
			200MHz	500MSPS	1.0GB/s	1.0h
			120MHz	300MSPS	0.6GB/s	1.8h
			50MHz	150MSPS	0.3GB/s	3.7h

1. IQ sampling rate is half of the sampling rate in the table.

## General Information

Temperature	Operation	0 to +55°C
	Storage	-40 to +70°C
Altitude		4500m
Power	Power supply	90-220Vac, 50/60Hz
	Consumption	150W (max.)
Display	Resolution	1920*1080
	Size	18.4 inch
Weight	Main machine	< 15kg, 13kg(typ)
	With package	< 20kg
Dimension	L	455mm
	W	345mm
	D	130mm

## Ordering Information

Module No.	Description
<b>Standard</b>	
SARP-6	Main machine, data acquisition and playback management software, power cord, carrying case
<b>Bandwidth Options (select one)</b>	
-B500	Maximum 500MHz bandwidth
-B200	Maximum 200MHz bandwidth
-B100	Maximum 100MHz bandwidth
-B50	Maximum 50MHz bandwidth
<b>Functional Options (select one)</b>	
-RC	Acquisition function
-PB	Playback function
-RCP	Acquisition & playback function
<b>Storage Options (select one)</b>	
-HC16	16TB nominal capacity
-HC08	8TB nominal capacity
-HC04	4TB nominal capacity
<b>Software Options</b>	
SignalVu-PC	Signal processing and analysis software
SignalPro	Signal generation software