S1433 Series Handheld Signal Generator

Datasheet

Saluki Technology Inc.

The document applies to the handheld signal generator of the following models:

- S1433D handheld signal generator (1MHz - 20GHz)
- S1433E handheld signal generator (1MHz - 26.5GHz)
- S1433F handheld signal generator (1MHz - 40GHz)
- S1433H handheld signal generator (1MHz - 50GHz)

Standard pack and accessories:

No.	Item
1	Main Machine
2	Power cord
3	Power adapter
4	USB cable
5	Li-on battery (embedded)
6	Certificate of calibration

Options of the S1433 handheld signal generator in addition to standard accessories:

Model No.	Description	Function
S1433-S01	USB Power Meter Option (software)	Provide USB Power Measurement Function (Requires USB Power sensor:H06-H13)
S1433-H01	Optional Accessories of English Version	English Signs, Keys, Menu
S1433-H02	Power Adapter	Power Adapter
S1433-H03	Rechargeable Lithium Ion Battery	Standby Battery
S1433-H04	Purple Cat5e Cable	Point to Point, 2 Meters
S1433-H05	Micro SD Card	Class4, Capacity: 8G
S1433-H06	S87230 USB CW Power Sensor	9kHz-6GHz, for CW power measurement (S01 is optional)
S1433-H07	S87231 USB CW Power Sensor	10MHz-18GHz, for CW power measurement (S01 is optional)
S1433-H08	S87232 USB CW Power Sensor	50MHz-26.5GHz, for CW power measurement (S01 is optional)
S1433-H09	S87233 USB CW Power Sensor	50MHz-40GHz, for CW power measurement (S01 is optional)
S1433-H10	S87234D USB Peak Power Sensor	50MHz-18GHz, for Peak power measurement (S01 is optional)
S1433-H11	S87234E USB Peak Power Sensor	50MHz-26.5GHz, for Peak power measurement (S01 is optional)
S1433-H12	S87234F USB Peak Power Sensor	50MHz-40GHz, for Peak power measurement (S01 is optional)
S1433-H13	S87234L USB Peak Power Sensor	500MHz-67GHz, for Peak power measurement (S01 is optional)

Model No.	Description	Function
S1433-H14	Functional Bag	Protect the Instrument
S1433-H15	Backpack	Easy to Carry
S1433-H16	Safety Carrying Case	High strength light weight packing case with handle for transportation

Preface

Thank you for choosing S1433 series signal generator produced by Saluki Technology Inc.

We devote ourselves to meeting your demands, providing you high-quality measuring instrument and the best after-sales service. We persist with “superior quality and considerate service”, and are committed to offering satisfactory products and service for our clients.

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Version

Rev01 2022.04

Saluki Technology

Document Authorization

The information contained in this document is subject to change without notice. The power to interpret the contents of and terms used in this document rests with Saluki.

Product Quality Assurance

The warranty period of the product is three years from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

Contacts

Service Tel:	886. 909 602 109
Website:	www.salukitec.com
Email:	sales@salukitec.com
Address:	No. 367 Fuxing N Road, Taipei 105, Taiwan (R.O.C.)

Content

1. Overview

Saluki S1433 series signal generator is a hand-held instrument specially designed for field testing. It has the functions of CW signal output, FM/AM/Pulse modulation, large dynamic range amplitude adjustment, step/list sweep etc. The integrated design of 8.4-inch large capacitive touch screen is convenient for users' operation.

S1433 series signal generator has the characteristics of small size, flexible power supply and good working environment adaptability, which is very suitable for on-site use. It can be applied to the field installation, debugging and daily maintenance of fault diagnosis of electronic integrated system, receiver performance test, radar, communication, navigation and other equipment test.

2. Main Characteristics

Key Features

- Wide frequency range: from 1MHz to 20/26.5/40/50GHz
- Higher frequency resolution: 0.1Hz
- Excellent phase noise performance: -110dBc/Hz@10kHz frequency offset @10GHz carrier(typical)
- Various auxiliary test interfaces: reference input/output, pulse input, monitoring output, synchronization output etc.
- Convenient and fast user operation experience: 8.4-inch large screen with bright LCD, convenient capacitive touch screen operation, integrated design of LCD and touch screen
- Strong environmental adaptability: the working temperature range is -10℃ to 50℃
- Flexible power supply mode: can be powered by battery or power adapter

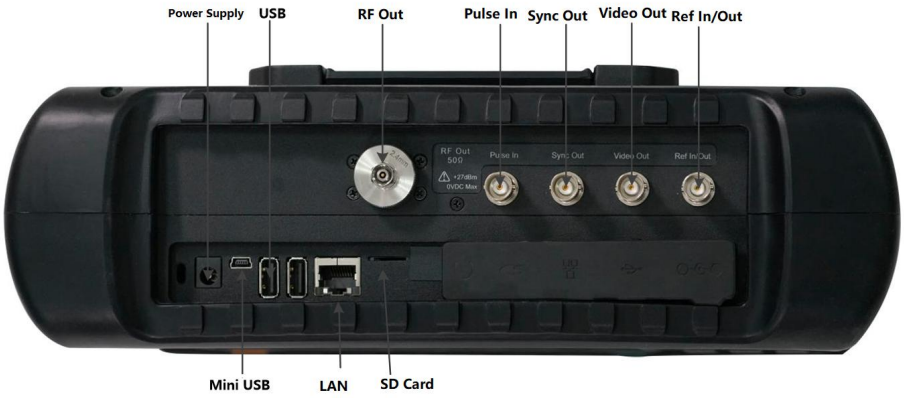
Main Functions

- CW signal output function
- FM/AM/Pulse modulation function
- Step and List sweep function
- Unstable amplitude and Unlock alarm function
- Support LAN and USB interface program control function

Wider Frequency Coverage

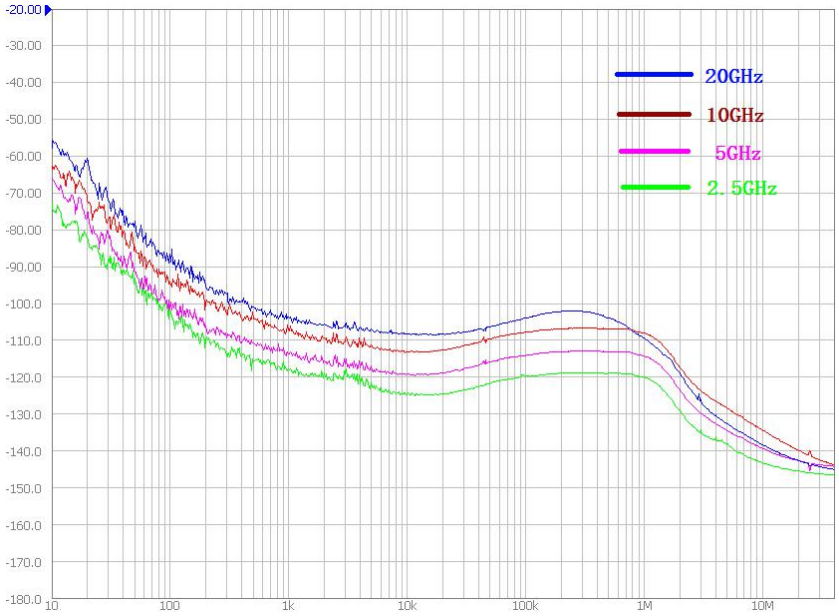
The frequency range of S1433 series signal generator is 1MHz to 20GHz/26.5GHz/40GHz/50GHz, the serialization minimum frequency is as low as 1MHz, and the highest frequency is as high as 50GHz, which can meet the needs of wide-band testing.

Various Auxiliary Test Interfaces



Wider Frequency Coverage

S1433 series signal generator SSB phase noise is better than -110dBc/Hz@10kHz frequency offset @10GHz carrier, which can meet the test requirements of most application scenarios.



Note 1: The supplementary features given in the form of typical values are for users' reference.

Convenient and fast user operation experience

8.4-inch large screen with high-brightness LCD, 800×600 pixel resolution, convenient capacitive touch screen operation, multi-window display, clear display of instrument setting parameters and status information, providing convenient and fast user operation experience.

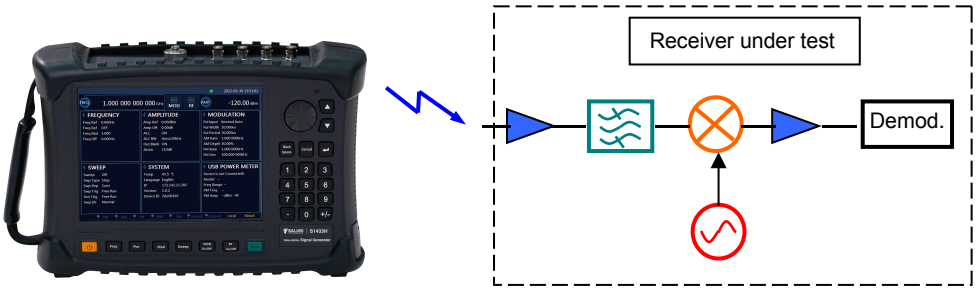
3. Typical Applications

Electronic system anti-jamming performance test

The S1433 series signal generator has a wide output frequency and power range, and has a variety of analog modulation functions. It can simulate and generate jamming signals in the actual combat environment during the test of the anti-jamming performance of the electronic system, which can be used for the test of the anti-jamming performance of the electronic system.

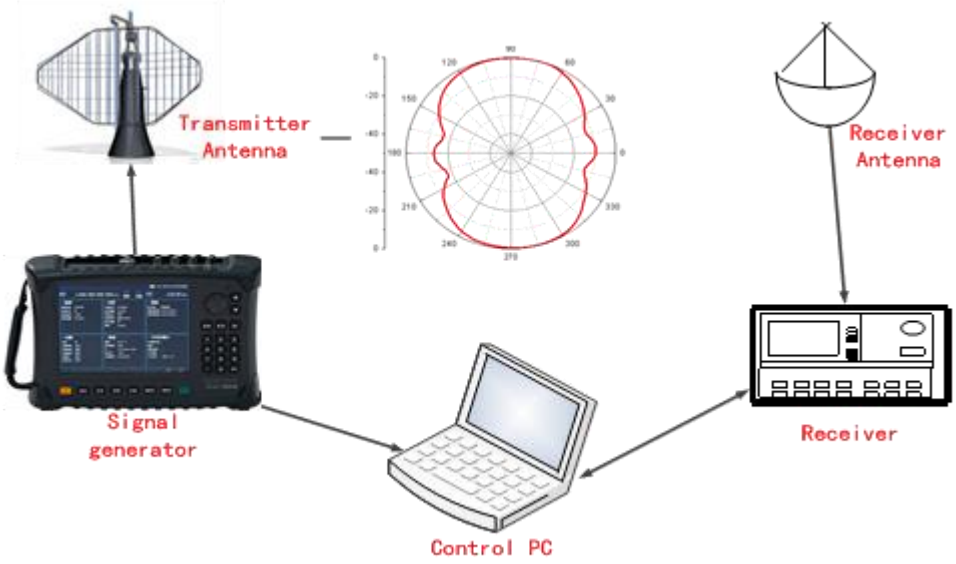
Radar reception performance test and troubleshooting

For radar and other electronic equipment receiving performance testing and troubleshooting applications, S1433 series signal generators provide CW, analog modulated signal output, and can provide excitation signal simulation.



Field test of antenna pattern test

For the field test application of the antenna pattern, the S1433 series signal generator outputs a signal with known fixed amplitude, which is used to test the indicator of the transmitting antenna pattern.



4. Technical Specifications

Frequency Characteristics			
Frequency Range	S1433D:1MHz - 20GHz S1433E:1MHz - 26.5GHz S1433F:1MHz - 40GHz S1433H:1MHz - 50GHz	Frequency	N (internal YO harmonic number)
		1MHz≤f<2.35GHz	1/2
		2.35GHz≤f<2.5GHz	1/8
		2.5GHz≤f<5GHz	1/4
		5GHz≤f≤10GHz	1/2
		10GHz<f≤20GHz	1
		20GHz<f≤40GHz	2
		40GHz<f≤50GHz	4
Frequency Resolution	0.1Hz		
Internal Timebase	Aging rate	$\pm 0.5\times10^{-6}$/year	
	Temperature effects	$\pm 0.3\times10^{-6}$ (-10℃ - 50℃, versus 25℃±5℃)	
Initial Calibration Accuracy	$\pm 0.5\times10^{-6}$		
Reference Input	Frequency	1MHz - 100MHz, step 1MHz	
	Power	-5dBm to +10dBm, impedance: 50Ω	
Reference Output	Frequency	10MHz	
	Power	>0dBm, 50Ω impedance	
Sweep Characteristics			
Sweep Features	Sweep mode	Step/List	

	Sweep points	2 to 1601
	Dwell time	10ms to 100s
	Trigger mode	Auto/manual
Level Characteristics		
Stable Output Power Range (25℃±10℃, CW mode)	1MHz≤f<2.5GHz	-120dBm to +5dBm
	2.5GHz≤f≤10GHz	-120dBm to +10dBm
	10GHz<f≤20GHz	-120dBm to +5dBm
	20GHz<f≤40GHz	-120dBm to +5dBm
	40GHz<f≤50GHz	-120dBm to 0dBm
Level Accuracy (25℃±10℃)	-10dBm<P≤Maximum stable output power	±1.0dB
	-60dBm<P≤-10dBm	±1.5dB
	-90dBm<P≤-60dBm	±1.8dB
Output Impedance	50Ω (Rating)	
SWR	1MHz≤f≤20GHz	<1.8:1
	20GHz<f≤40GHz	<2.0:1
	40GHz<f≤50GHz	<2.5:1
Maximum Reverse Power	+27dBm (0V DC) (Rating)	
Spectral Purity (specification is point frequency without modulated mode)		
Harmonics (Measured at +5dBm or maximum specified power, whichever is lower)	1MHz≤f≤1.5GHz	≤-40dBc
	1.5GHz<f≤2.5GHz	≤-30dBc
	2.5GHz<f≤19GHz	≤-40dBc
	19GHz<f≤25GHz	≤-30dBc
	25GHz<f≤50GHz	≤-35dBc (typical)
Non-harmonics (0dBm, >10kHz offset)	1MHz≤f<2.5GHz	≤-54dBc
	2.5GHz≤f<5GHz	≤-60dBc
	5GHz≤f≤10GHz	≤-56dBc
	10GHz<f≤20GHz	≤-50dBc
	20GHz<f≤38GHz	≤-44dBc
	38GHz<f≤50GHz	≤-40dBc
SSB Phase Noise (at maximum stable output power)	1MHz≤f<2.35GHz	≤-82dBc/Hz@100Hz
		≤-98dBc/Hz@1kHz
		≤-108dBc/Hz@10kHz
		≤-106dBc/Hz@100kHz
	2.35GHz≤f<2.5GHz	≤-94dBc/Hz@100Hz
		≤-110dBc/Hz@1kHz

		≤-120dBc/Hz@10kHz
		≤-118dBc/Hz@100kHz
	2.5GHz≤f<5GHz	≤-88dBc/Hz@100Hz
		≤-104dBc/Hz@1kHz
		≤-114dBc/Hz@10kHz
		≤-112dBc/Hz@100kHz
	5GHz≤f≤10GHz	≤-82dBc/Hz@100Hz
		≤-98dBc/Hz@1kHz
		≤-108dBc/Hz@10kHz
		≤-106dBc/Hz@100kHz
	10GHz<f≤20GHz	≤-76dBc/Hz@100Hz
		≤-92dBc/Hz@1kHz
		≤-102dBc/Hz@10kHz
		≤-100dBc/Hz@100kHz
	20GHz<f≤40GHz	≤-70dBc/Hz@100Hz
		≤-86dBc/Hz@1kHz
		≤-96dBc/Hz@10kHz
		≤-94dBc/Hz@100kHz
	40GHz<f≤50GHz	≤-68dBc/Hz@100Hz
		≤-84dBc/Hz@1kHz
		≤-94dBc/Hz@10kHz
		≤-92dBc/Hz@100kHz
Modulation Characteristics		
Pulse Modulation (Frequency >10MHz)	On/off ratio	≥80dB
	Rise/fall times	≤30ns
	Minimum pulse width ALC ON	1us (Deviation±50ns)
	Minimum pulse width ALC OFF	100ns (Deviation±20ns)
Amplitude Modulation (Frequency >10MHz)	Modulation type	Linear modulation, exponent modulation
	Modulation rate (3dB bandwidth)	DC - 20kHz
	Maximum depth	Linear closed loop: ≥90%
		Exponent closed loop: ≥20dB
	Linear AM accuracy	± (5%× setting depth＋1%) (at 1kHz modulation rate)
	Exponent AM accuracy	± (5%× setting depth＋1dB) (at 1kHz modulation rate)
Frequency Modulation (Frequency >10MHz)	Modulation rate (3dB bandwidth)	DC - 20kHz
	Maximum peak deviation	N×800kHz (N: YO harmonic number) , accuracy: ±10% (at

		1kHz)
	Distortion	±3% (at 1kHz, 100kHz offset, 300Hz - 3kHz demodulation bandwidth)
General Characteristics		
RF Output Port	S1433D	N (female) , impedance: 50Ω
	S1433E	2.4mm (male) , impedance: 50Ω
	S1433F	2.4mm (male) , impedance: 50Ω
	S1433H	2.4mm (male) , impedance: 50Ω
Dimensions (W×H×D)	314mm×218mm×91mm (excluding handle, foot mat and footing)	
Weight	≤ 5.5kg (including battery)	
Power Supply	Power adapter	input: 100 - 240V, 50/60Hz AC
		output: 15V_{DC}, 4A
	Lithium electronic battery	10.8V, 9900mAh
Power Consumption	≤45W (Battery charging is not included)	
Temperature Range	Operating temperature	-10℃ to +50℃ (battery charging temperature: 0℃ to +45℃)
	Storage temperature	-40℃ to +70℃ (battery storage temperature: -20℃ to +60℃)
Other Interface	Pulse input	BNC (male)
	Synchronization output	BNC (male)
	Monitoring output	BNC (male)
	Reference input/output	BNC (male)
Note: Ratings refer to expected performance, or describe product performance that is useful in the product but not covered by the product warranty.		

5. Compliant

5. 1. CE

CE

- EMC

Complies with the requirements of the **EC EMC** directives.

Test Standards:EN 61326

- Safety

Complies with **EC LVD** Directive.

Test Standard:**EN61010-1**

5. 2. ISO

- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

- End of Document -