



# SAM533 Series Spectrum Analyzer Module Datasheet



Saluki Technology Inc.

### The document applies to the instruments of the following models:

- SAM533A spectrum analyzer module (5kHz - 8GHz)
- SAM533B spectrum analyzer module (9kHz - 20GHz)

### Standard Accessories of SAM533 spectrum analyzer module:

No.	Item	Qty.
1	Main Machine	1 unit
2	LAN Connection Cable / Power Adapter	1 pcs
3	CD (PC software, Manual)	1 pcs

### Options of the SAM533 spectrum analyzer module:

Option No.	Item	Description
SAM533-01	10MHz High-stability Time-base Option	/
SAM533-02	Standard Housing	Spectrum analyzer module housing

## Preface

Thanks for choosing Saluki Technology Inc instrument. 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.

## Document No.

SAM533-02-01

## Version

Rev01 2022.06

Saluki Technology

## Authorization

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

Saluki Tech owns the copyright of this datasheet which should not be modified or tampered by any organization or individual, or reproduced or transmitted for the purpose of making profit without its prior permission, otherwise Saluki will reserve the right to investigate and affix legal liability of infringement.

## Product Quality Assurance

The warranty period of the product is 36 months from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period. The user should return the product to the manufacturer and prepay mailing costs. The manufacturer will return the product and such costs to the user after maintenance.

## 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:	<a href="http://www.salukitec.com">www.salukitec.com</a>
Email:	<a href="mailto:sales@salukitec.com">sales@salukitec.com</a>
Address:	No. 367 Fuxing N Road, Taipei 105, Taiwan (R.O.C.)

---

## Content

1. Overview.....	5
2. Specification Details.....	5
2.1. Frequency.....	5
2.2. Amplitude.....	6
2.3. Resolution Bandwidth (RBW).....	6
2.4. DANL (0dB attenuation, RBW=1Hz).....	6
2.5. Phase Noise.....	7
2.6. Sweep Time.....	7
2.7. Trigger.....	7
2.8. Spurious Response.....	7
2.9. Input /Output.....	8
2.10. General.....	8

## 1. Overview

SAM533 series spectrum analyzer module is a wide-band, high-performance spectrum analyzer. The frequency measurement range covers up to 18GHz. The main technical indicators are comparable to the desktop spectrum analyzer. The integrated design of highly integrated RF front-end and digital processing enables it to have ultra-small size and independent signal processing capabilities, especially suitable for microwave test system integration and signal monitoring sensor applications. The product adopts fully digital IF processing technology to ensure higher measurement accuracy and excellent repeatability, and has independent signal processing capability, which is especially suitable for system integration and signal monitoring applications. The maximum real-time bandwidth of 40MHz meets the test of common radio signals such as mobile communication, TV and WiFi, and the 145MHz analog IF output provides users with a variety of test options.

The PC host computer directly obtains the measurement results through the USB or LAN interface. Users can flexibly carry out secondary development according to their needs, and can quickly build and upgrade the integrated test system. SAM533 series spectrum analyzer module can be widely used in aerospace, microwave communication, satellite navigation, radar detection, electronic detection and countermeasures, precision guidance and other fields.

### Key Features

- Frequency range: 5kHz - 8GHz / 9kHz - 20GHz
- Resolution bandwidth: 1Hz -5MHz
- Sensitive, DANL < -160dBm
- Maximum real-time bandwidth: 40MHz
- 145MHz analog IF output
- Independent source modules provide wider choices for system integration
- Adopt USB, LAN interface, easy to control connection
- Standard and complete SCPI commands make system integration testing flexible and convenient
- Small size, ultra-light weight, easy system integration

## 2. Specification Details

### 2.1. Frequency

	SAM533A	SAM533B
<b>Frequency range</b>	5kHz - 8GHz	9kHz - 20GHz
<b>Frequency Readout Accuracy</b>	± (frequency indication × frequency reference+1% × span+10% × RBW+0.5 × [span/(number of sweep points-1)]+1Hz)	

<b>Aging Rate</b>	<1ppm/year	<0.5ppm/year
<b>Temperature Stability</b>	<0.5ppm (15°C - 35°C)	<0.2ppm (15°C - 35°C)

## 2. 2. Amplitude

	SAM533A	SAM533B
<b>Measurement Range (fc≥10MHz)</b>	DANL to +20dBm	
<b>Maximum Safe Input Level</b>	Average continuous power, +27dBm	
<b>Maximum DC Voltage</b>	50Vdc	
<b>Input Attenuator Range</b>	0 to 30dB in 1 dB step	
<b>Accuracy (20-30°C)</b>	±1.5dB	

## 2. 3. Resolution Bandwidth (RBW)

	SAM533A	SAM533B
<b>Range</b>	1Hz to 5MHz, in 1,3,5 steps	
<b>Selectivity (60dB/3dB)</b>	RBW ≤1MHz	< 5:1 (typical, digital implementation, close to Gaussian shape)
<b>Accuracy</b>	RBW ≤1MHz	<10% (typical <5%)
<b>Video Bandwidth (VBW)</b>	1Hz - 5MHz	

## 2. 4. DANL (0dB attenuation, RBW=1Hz)

	SAM533A	SAM533B
<b>Preamplifier Off</b>	5kHz - 1MHz: <-120dBm, typical -130dBm 1MHz - 10MHz: <-130dBm, typical -140dBm 10MHz - 2GHz: <-138dBm, typical -142dBm 2GHz - 3.1GHz: <-136dBm, typical -140dBm 3.1GHz - 5GHz: <-136dBm, typical -140dBm 5GHz - 8GHz: <-135dBm, typical -138dBm	9kHz - 1MHz, typical <-100dBm 1MHz - 20MHz, typical <-105dBm 20MHz - 4.0GHz, typical <-138dBm 4GHz - 8GHz, typical <-135dBm 8GHz - 14GHz, typical <-134dBm 14GHz - 20GHz, typical <-130dBm
<b>Preamplifier On</b>	1MHz - 10MHz: <-140dBm, typical -145dBm 10MHz - 2GHz: <-158dBm, typical -162dBm 2GHz - 3.1GHz: <-156dBm, typical -160dBm	1MHz - 20MHz, typical <-138dBm 20MHz - 4GHz, typical <-155dBm 4GHz - 8GHz, typical <-150dBm

	3.1GHz - 5GHz: <-155dBm, typical -159dBm 5GHz - 8GHz: <-153dBm, typical-155dBm	8GHz - 14GHz, typical <-155dBm 14GHz - 20GHz, typical <-152dBm
--	---	---

## 2. 5. Phase Noise

	SAM533A		SAM533B	
CF=1GHz	Carrier offset 10kHz	-98dBc/Hz	Carrier offset 10kHz	-95dBc/Hz
	Carrier offset 1MHz	-112dBc/Hz	Carrier offset 1MHz	-106dBc/Hz
<b>Note: SSB phase noise (Sample detector, Trace average ≥10)</b>				

## 2. 6. Sweep Time

	SAM533A	SAM533B
Non-zero Span	5ms - 3000s	
Zero Span	20us - 3000s	
Sweep Mode	Continuous, single	

## 2. 7. Trigger

	SAM533A	SAM533B
Trigger Mode	Free run, video, external	
External Trigger Level	5V TTL level, Nominal value	

## 2. 8. Spurious Response

	SAM533A	SAM533B
TOI (>30MHz)	+7dBm	
SHI (>10MHz)	+40dBm	
Input Related Spurious (>10MHz)	<-60dBc	
Residual Response (>10MHz)	<-90dBm, typical <-100dBm	<-85dBm

## 2. 9. Input /Output

	SAM533A	SAM533B
RF Input/Output	SMA female (50Ω)	
USB	USB 1.1 B	
LAN	10/100 Base-T, RJ-45 Connectivity	
FM/AM Audio Demodulation	Headphone jack	
Reference Input	10MHz, SMA female, Input level 0dBm to +10dBm	
Reference Output	10MHz, SMA female, Output level 0dBm±2dB	
IF Output	145MHz, SMA female	
External Trigger Input	5V TTL (± 10V, maximum 100mA)	

## 2. 10. General

	SAM533A	SAM533B
Dimension	120 (W) × 165 (D) × 32 (H) mm	
Weight	900g	
Operating Temperature	0°C to 50°C	
Storage Temperature	-40°C to +70°C	
Power Supply	Voltage +9 to +13VDC, Current 1.2A	Voltage +9 to +13VDC, Current 1.4A

- End of Document -