S3601 Series Vector Network Analyzer

Datasheet

Saluki Technology Inc.

The document applies to the vector network analyzer of the following models:

- S3601A Vector network analyzer (100kHz - 3GHz).
- S3601B Vector network analyzer (100kHz – 8.5GHz).

Standard Accessories of S3601 Vector network analyzer

Item	Name	Qty
1	Main Machine	1 Set
2	Power Cord	1 pcs
3	User Manual	1 pcs
4	CD or U disk	1 pcs

Options of the S3601 Vector network analyzer

- **S3601A**

Part No.	Name	Description
S3601A-01	75Ω port impedance	Notes：After choosing this option, the main unit will not has 50Ω port impedance system.
S3601A-02	N-type testing cable	GORE-OSZKUZKU0240, dual male, 60cm
S3601A-03	N-type testing cable	GORE-OSZKUZKV0240, female male, 60cm
S3601A-05	20205 N-type calibration kit	DC – 3GHz
S3601A-06	20204 N-type 75Ω calibration kit	\
S3601A-07	Economical stable phase testing cable	Saluki-N/J.SMA/J.197C-800, N-type to 3.5mm connector, dual male, 80cm
S3601A-08	Economical stable phase testing cable	Saluki-N/J.N/K.197C-800, N-type connector, female-male, 80cm
S3601A-09	Economical stable phase testing cable	Saluki-N/J.N/J.197C-800, N-type connector, dual male, 80cm
S3601A-10	75Ω testing cable	24-0800-51M1-51M1
S3601A-11	20402 Electronic calibration Kit	300kHz - 18GHz, N Type (female to male), 2 port
S3601A-12	20403 Electronic calibration Kit	10MHz - 26.5GHz, 3.5mm (female to male), 2 port

Part No.	Name	Description
S3601A-13	20405 Electronic calibration Kit	10MHz - 20GHz, 3.5mm (female), 4 port
S3601A-16	Aluminum carrying case	\
S3601A-17	Front panel jumper	Supports 4-port extension and receiver through test
S3601A-18	2813A 4-port test equipment	Need option S3601A-17
S3601A-19	Cabinet	Easy to build system

- **S3601B**

Part No.	Name	Description
S3601B-02	N-type testing cable	GORE-OSZKUZKU0240, dual male, 60cm
S3601B-03	N-type testing cable	GORE-OSZKUZKV0240, female-male, 60cm
S3601B-07	Economical stable phase testing cable	Saluki-N/J.SMA/J.197C-800, N-type to 3.5mm connector, dual male, 80cm
S3601B-08	Economical stable phase testing cable	Saluki-N/J.N/K.197C-800, N-type connector, female-male, 80cm
S3601B-09	Economical stable phase testing cable	Saluki-N/J.N/J.197C-800, N-type connector, dual male, 80cm
S3601B-11	20402 Electronic calibration kit	300kHz - 18GHz, N -type (female to male), 2 port
S3601B-12	20403 Electronic calibration kit	10MHz - 26.5GHz, 3.5mm (female to male), 2 port
S3601B-13	20405 Electronic calibration kit	10MHz - 20GHz, 3.5mm (female), 4 port
S3601B-16	Aluminum carrying case	\
S3601B-18	2813A 4-port test equipment	Need option S3601B-29
S3601B-19	Cabinet	Easy to build system
S3601B-21	20201 N-type calibration kit	DC - 9GHz
S3601B-22	20202 3.5mm calibration kit	DC - 9GHz
S3601B-23	32111 waveguide calibration kit	1.72GHz - 2.61GHz
S3601B-24	32112 waveguide calibration kit	2.6GHz - 3.95GHz

Part No.	Name	Description
S3601B-25	32113 waveguide calibration kit	3.94GHz - 6.0GHz
S3601B-26	32114 waveguide calibration kit	4.64GHz - 7.05GHz
S3601B-27	32115 waveguide calibration kit	5.88GHz - 8.17GHz
S3601B-28	32116 waveguide calibration kit	7.0GHz - 10.0GHz
S3601B-29	Front panel jumper	Supports 4-port extension and receiver through test

Preface

Thanks for choosing S3601 vector network analyzer produced by Saluki Technology Inc.

Document No.

S3601-02-01

Version

Rev04 2019.04

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 36 months from the date of delivery.

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/Environment Management

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

Contacts

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Content

1 Overview

S3601 vector network analyzer is suitable for industries like wireless communication, CATV, automotive and education. S3601 is capable to do amplitude, phase, group delay S parameter measurement of filters, amplifiers, antennas, cables, connectors etc. S3601 uses Window XP system and provide multi display format, multi calibration types, multi window display and flexible interfaces.

Definitions

Instrument specifications listed in this datasheet applies to all different configurations S3601 VNA unless options are clearly noted.

Specification (Spec.)

Specifications describe the performance of parameters within the warranty of the instrument. Product specifications applies under the following conditions:

- 90 min warming up
- Environmental temperature of 25℃ (± 5℃) with less than 1℃ deviation from the calibration temperature
- Specifications include measurement uncertainties

Data in this document are Spec. unless otherwise noted.

Typical (typ.)

Typical data is not guaranteed by instrument warranty. It describes additional product performance information that 80 percent of the units' exhibit. Typical data only valid at 25℃. Typical performance does not include measurement uncertainty.

Nominal(nom.)

Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but are not covered by the product warranty.

Calibration Kit

Corrected system in this document is calibrated with following calibration kit:

- SAV20205 N Type Mechanical Calibration Kit (DC – 3GHz)
- SAV20201 N Type Mechanical Calibration Kit (DC – 9GHz)

2 Specifications

2.1 Frequency

	S3601A	S3601B
Frequency Range	100kHz - 3GHz	100KHz - 8.5GHz
Frequency Resolution	1Hz	1Hz
Frequency Accuracy	5×10^{-6}, (23℃±3℃)	5×10^{-6}, (23℃±3℃)

2.2 Test Port Specification

2.2.1 Power Setting Range

	S3601A	S3601B
Output Power Range (Full Frequency)	-45 to +10dBm	-55 to +10dBm

2.2.2 Power Resolution

	S3601A	S3601B
Power Resolution	0.01dB	0.01dB

2.2.3 Damage Level

	S3601A	S3601B
Damage Level	+26dBm	

2.2.4 Output Harmonics

	S3601A	S3601B
Output Harmonics (Output Power +5dBm)	≤-18dBc	
Non Harmonics (Output Power +5dBm, 1kHz offset)	≤-20dBc	

2.3 Network Specifications

2.3.1 System Dynamic Range

S3601A			S3601B		
Frequency range	IF=10Hz(dB)	IF=3KHz(dB)	Frequency range	IF=10Hz(dB)	IF=3KHz(dB)

100KHz - 1MHz	90dB	60dB	100KHz - 20MHz	110dB	80dB
1MHz -10MHz	110dB	80dB	20MHz -3GHz	125dB	95dB
10MHz - 3GHz	125dB	95dB	3GHz - 6GHz	123dB	93dB
			6GHz - 8.5GHz	118dB	88dB

2.3.2 Noise Floor

- IFBW=10Hz

Frequency range	S3601A	Frequency range	S3601B
100KHz - 1MHz	-90dBm	100KHz - 20MHz	-95dBm
1MHz -10MHz	-103dBm	20MHz -3GHz	-115dBm
10MHz - 3GHz	-115dBm	3GHz - 6GHz	-115dBm
		6GHz - 8.5GHz	-115dBm

2.3.3 Corrected System Performance

Measurement environmental temperature 23° ±3 °C, with < 1 °C deviation from calibration temperature.

- **Test cables**

SCAVNA18MM-(N/N)	Saluki N Type test cable
SCAVNA18MF-(N/N)	Saluki N Type test cable

- **Calibration Kit**

SAV20201 N type mechanical calibration kit (DC – 9GHz)

SAV20205 N type mechanical calibration kit (DC – 3GHz)

	S3601A		S3601B	
	Frequency	Figure	Frequency	Figure
Effective Directionality	100kHz - 1MHz	49 dB	100kHz - 3GHz	46 dB
	1MHz - 3GHz	46 dB	3GHz - 6GHz	40 dB
			6GHz - 8.5GHz	38 dB
Effective Source Match	100kHz - 1MHz	44 dB	100kHz - 3GHz	36 dB

	S3601A		S3601B	
	1MHz - 3GHz	40 dB	3GHz - 6GHz	35 dB
			6GHz - 8.5GHz	33 dB
Effective Load Match	100kHz - 1MHz	49 dB	100kHz - 3GHz	44 dB
	1MHz - 3GHz	46 dB	3GHz - 6GHz	40 dB
			6GHz - 8.5GHz	36 dB
Reflection Tracking	100kHz - 1MHz	±0.03 dB	100kHz - 3GHz	±0.03 dB
	1MHz - 3GHz	±0.02 dB	3GHz - 6GHz	±0.04 dB
			6GHz - 8.5GHz	±0.05 dB
Transmission Tracking	100kHz - 1MHz	±0.03 dB	100kHz - 3GHz	±0.03 dB
	1MHz - 3GHz	±0.02 dB	3GHz - 6GHz	±0.04 dB
			6GHz - 8.5GHz	±0.05 dB

2.3.5 Trace Noise

	S3601A		S3601B	
	Frequency range	**Figure**	**Frequency range**	**Figure**
Magnitude Trace Noise (IF = 3kHz)	100kHz - 10MHz	0.03 dB	100kHz - 10MHz	0.03dB
	10MHz - 3GHz	0.001 dB	10MHz - 3GHz	0.001 dB
			3GHz - 8.5GHz	0.002 dB
Phase Trace Noise (IF = 3kHz)	100kHz - 10MHz	0.3°	100kHz - 10MHz	0.3°
	10MHz - 3GHz	0.01°	10MHz - 3GHz	0.01°
			3GHz - 8.5GHz	0.06°

2. 4 General

Measurement Domain	Frequency & Time
Measurement Format	● Rectangular coordinate format: Log, Lin, phase, group delay, SWR, real, image ● Smith chart ● Polar coordinate
Channel	Max. 64 independent channels
Display window	Max 32 windows Max 8 traces per window
IF Bandwidth	1Hz - 5MHz (Stepping by 1,2,3,5,7)
Sweep Type	Linear Frequency, Logarithmic frequency, Power sweep, CW sweep, Segment sweep
Sweep Point	1 - 16001
Average Factor	1 - 1024
Magnitude Display Resolution	0.001dB/div
Phase display Resolution	0.01°/div
Reference Level Magnitude	-500 ~ +500dB
Input Reference Phase Range	-500 ~ +500°
Port Connector Type	N type (Female)， 50 Ω impedance / Optional 75Ω
Measurement of Ports	2 port Standard
Peripheral Interface	USB, GPIB, VGA, LAN
Operating System	Windows xp/ 7
Dimension (LxHxW)	435 x 233 x 348（W x H x D)
The Maximum Power Consumption	150W
Maximum Weight	16kg

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