SV4401A

Handheld Vector Network Analyzer

SPECIFICATION

1. Introduction

1.1. About SV4401A

SV4401A is a handheld Vector Network Analyzer (VNA) with frequency range of 50kHz ~ 4.4GHz. It can be used for S11 and S21 measurements. The S21 dynamic range of SV4401A is 75 dB, while the S11 dynamic range is 50 dB.

SV4401A is suitable for antenna testing of MF/HF/VHF/UHF bands, such as shortwave antennas, ISM band antennas, WiFi antennas, bluetooth antennas, GPS antennas, etc. It can also be used to measure filters, amplifiers, attenuators, cables, power dividers, couplers, duplexers and other RF components. SV4401A supports a variety of display formats: Log Mag, Linear Mag, Phase, Smith R+jX, Smith R+L/C, VSWR, Polar, Group delay, Resistance, Reactance, etc. In addition, SV4401A supports TDR function which is useful for cable lengths measurement.

SV4401A is designed with metal case, which is durable and can effectively shield electromagnetic interference. The dimension of SV4401A is 190mmx130mmx30mm, and a back bracket is designed for desktop use. The RF interface of SV4401A is N-type female connector and come with a pair of N-to-SMA adapters, witch can be used to connect DUTs with SMA interfaces.

With the optimally designed signal processing system, the scan speed of SV4401A is 400 points/s, which enables a quasi-real-time measurement, and the maximum scanning points is up to 1001.

The screen of SV4401A is a 7-inch high-brightness IPS capacitive touch screen, which allows users to see the screen content clearly in outdoor. SV4401A adopts a full touch screen design, with 4 physical buttons, users can quickly set frequency range, scale, turn on/off traces, add/delete markers, screenshots, and so on. The operation is quite convenient and smooth.

The SV4401A has two built-in 3350mAh 18650 lithium batteries with a battery life of up to 4 hours. The charging interface is USB Type-C, and the Type-C cable can be used to charge the device and also for data transfer. At the same time, the SV4401A has a built-in 8GB memory card, which can be used to store calibration status, snp files, screenshots, etc.

1.2. Features

- Frequency range：50kHz - 4.4GHz;
- S21 dynamic range：75dB，S11 dynamic range：50dB;
- 7-inch high-brightness IPS capacitive touch screen, clearly visible outdoors;
- Metal case, effectively shield electromagnetic interference;
- N-type RF connector, stable and durable;
- Full touch screen + 4 physical buttons, convenient and smooth operation;
- Dimensions: 190mmx130mmx30mm;
- Designed with a back bracket for desktop operation;
- Supports local screenshot, able to save the screenshot to the built-in memory card;
- Built-in 8GB memory card to store calibration status, snp files, screenshots, etc;
- 2 built-in 3350mAh 18650 lithium batteries with a battery life of up to 4 hours;
- TDR futction, which can be used to measure cable length;
- Up to 2 reference traces;
- Up to 8 markers, and the marker table can be dragged to anywhere on the screen;
- 12 save/recall slots, and supports save/recall calibration state from files;
- Charging via USB Type-C, and the charging voltage is 5V DC;
- Designed with a 5V/1A USB power output port;
- Firmware upgrade via virtual U disk with USB Type-C cable;
- Comes with SMA calibration kit and 50cm SMA coaxial cable;
- Screen brightness adjustable;
- Automatic sleep to save power;
- Supports console commands and PC software;
- Comes with a storage bag;

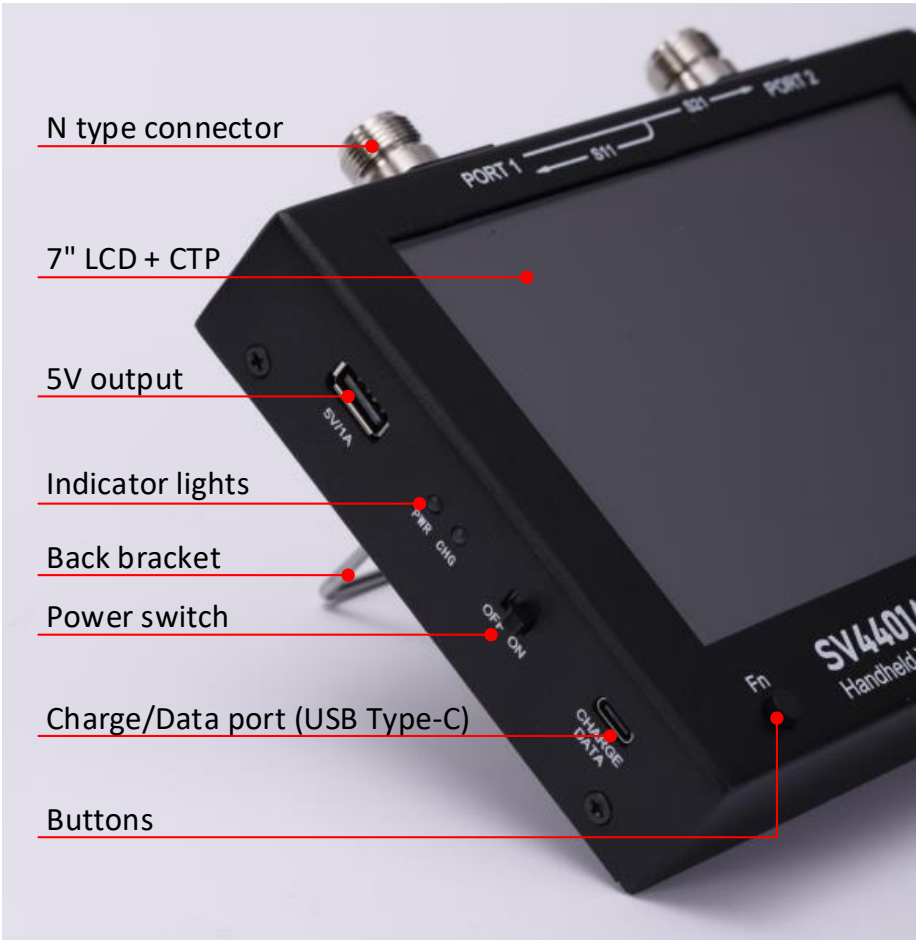
1.3. Specifications

Parameter	Specification	Conditions
Frequency range	50kHz ~ 4.4GHz	
RF power out	-42dBm ~ -12dBm	step：1dB
RF connectors	N-type female	Come with N to SMA adapters
RF power in	0dBm (Max)	DC < 5V
Frequency accuracy	< ±1 ppm	< 140MHz
	< ± 5kHz	> 140MHz
S21 Dynamic range[1]	75dB	< 3GHz
	60dB	> 3GHz
S11 Dynamic range[1]	50dB	< 3GHz
	40dB	> 3GHz
Scan points	1001	Can be set to 101-1001
Scan speed	400 pts/s	f > 140MHz
IFBW	12.5kHz (default)	6.25k/3.12k/1k/300Hz/100Hz/30Hz
Smoothing	Arithmetic mean	Average: 1 ~ 25
Traces	7	4 data traces, 2 reference traces, 1 TDR trace
Markers	8	
Calibration state storage	12	Calibration status can be stored as files to the built-in memory card
Storage capacity	8GB	Built-in memory card
Display	7-inch IPS LCD	Resolution: 1024x600
Operation mode	Capacitive touch and physical buttons	
Screenshot	On device	
Power consumption	5W	

Battery life time	4 hours	50% brightness
Battery	18650 lithium battery	3.6V/3350mAh×2
Charge/Data port	USB Type-C	
Charge voltage	4.7V ~ 5.5V	Recommended to charge with 5V/2A
USB power output	5V/1A	
Dimensions	190mmx130mmx30mm	RF connector not included
Shell material	Iron	
Weight	1.15kg	
	1.65kg	Includes accessories and packaging
Operating Temperature	0℃-45℃	

1: Dynamic range specifications are reported under the condition of 12.5kHz IFBW and 1x averaging. Reducing the IFBW and increasing the averaging times will improve dynamic range, while the scan speed will drop.

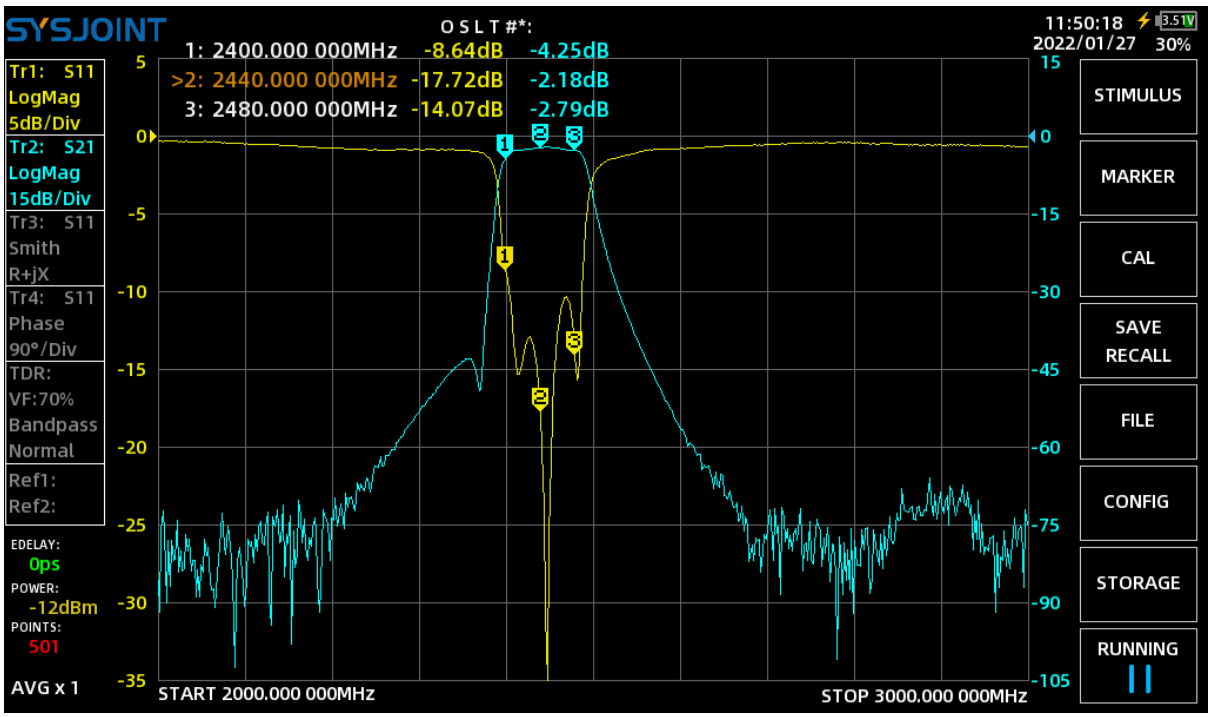
2. Appearance



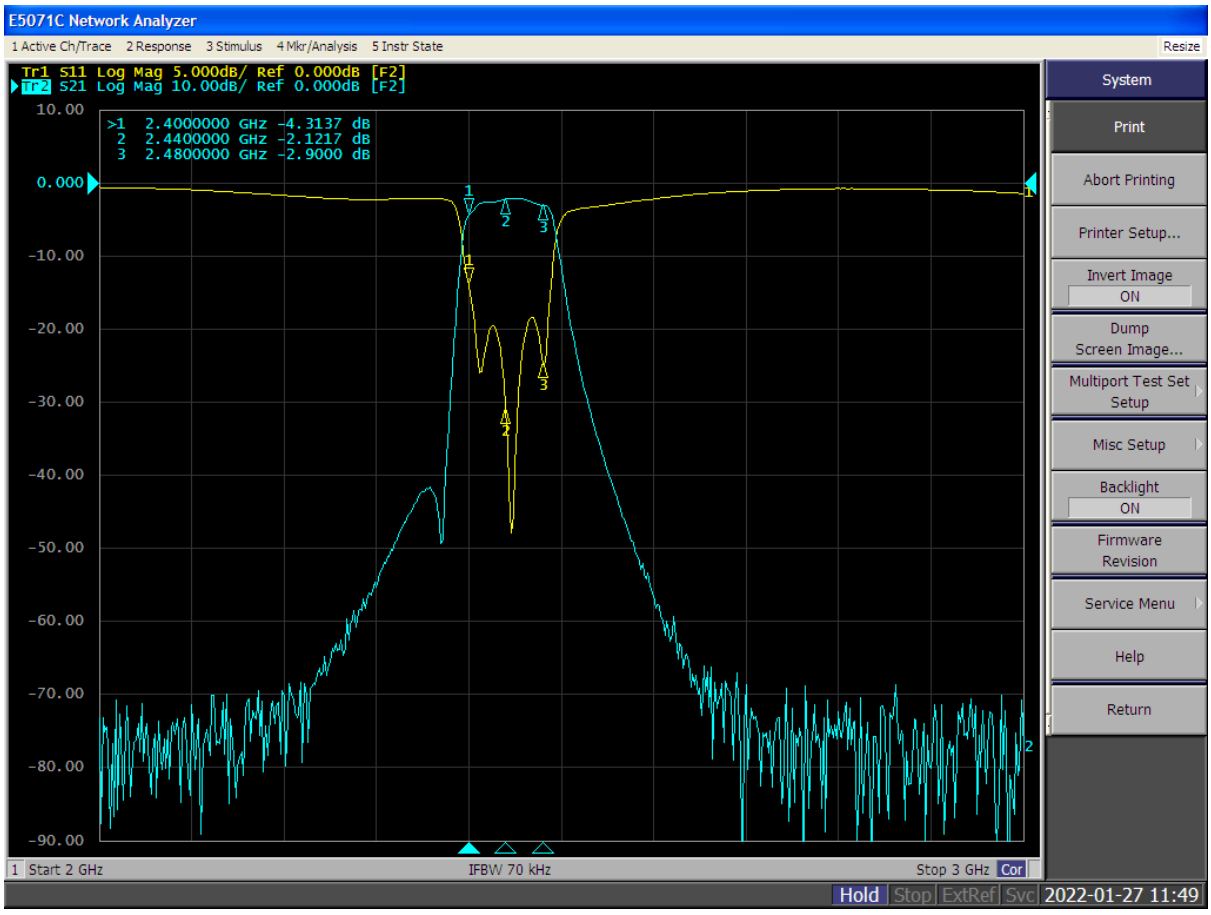

SYSJOINT
SV4401A
Handheld Vector Network Analyzer
PORT 1
S11
S21
PORT 2
Fn
SV4401A
Handheld Vector Network Analyzer
Ctrl

3. Test comparison

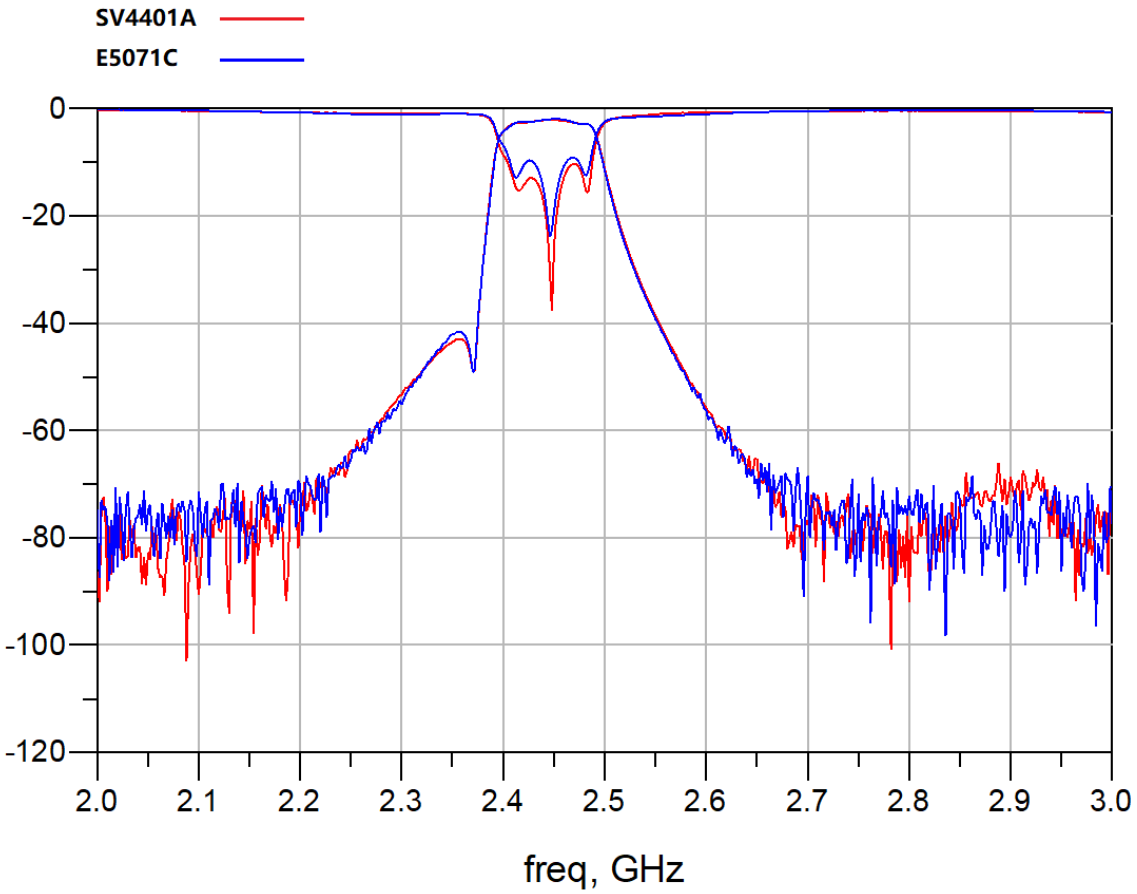
Testing result of 2.4GHz bandpass filter by SV4401A:



Testing result of 2.4GHz bandpass filter by Agilent E5071C:



Testing result comparison:



4. Shipping list

- SV4401A ×1
- N to SMA adapter ×2
- SMA OPEN/SHORT/LOAD calibration kit ×1
- SMA-KK adapter ×2
- SMA-JJ adapter ×1
- 50cm RG316 coaxial cable ×2
- USB type-C cable ×1
- Storage bag ×1