Seesii NanoVNA-F V3

Seesii NanoVNA-F V3 Vector Network Analyzer User Manual

Comprehensive Guide for Operation and Maintenance

1. INTRODUCTION

The Seesii NanoVNA-F V3 is an advanced Vector Network Analyzer designed for precise measurement of RF components and antenna systems. This upgraded model features a wide frequency range from 1MHz to 6GHz, a 4.3-inch touchscreen display, and enhanced scanning capabilities. It is an essential tool for radio enthusiasts, engineers, and technicians working with MF/HF/VHF/UHF/SHF bands.

Key features include:

- Ultra-wide 1MHz-6GHz measuring frequency range.

- 4.3-inch 800x480 large touchscreen display for clear data visualization.

- Fast scan speed up to 200 points/second with up to 801 scanning points.

- Support for Time Domain Reflector (TDR) function for cable length and fault detection.

- Compatibility with PC software like NanoVNA-Saver for data transfer and analysis.

- Built-in 4500mAh rechargeable battery for extended portable use.

- Durable metal casing for effective electromagnetic interference shielding.
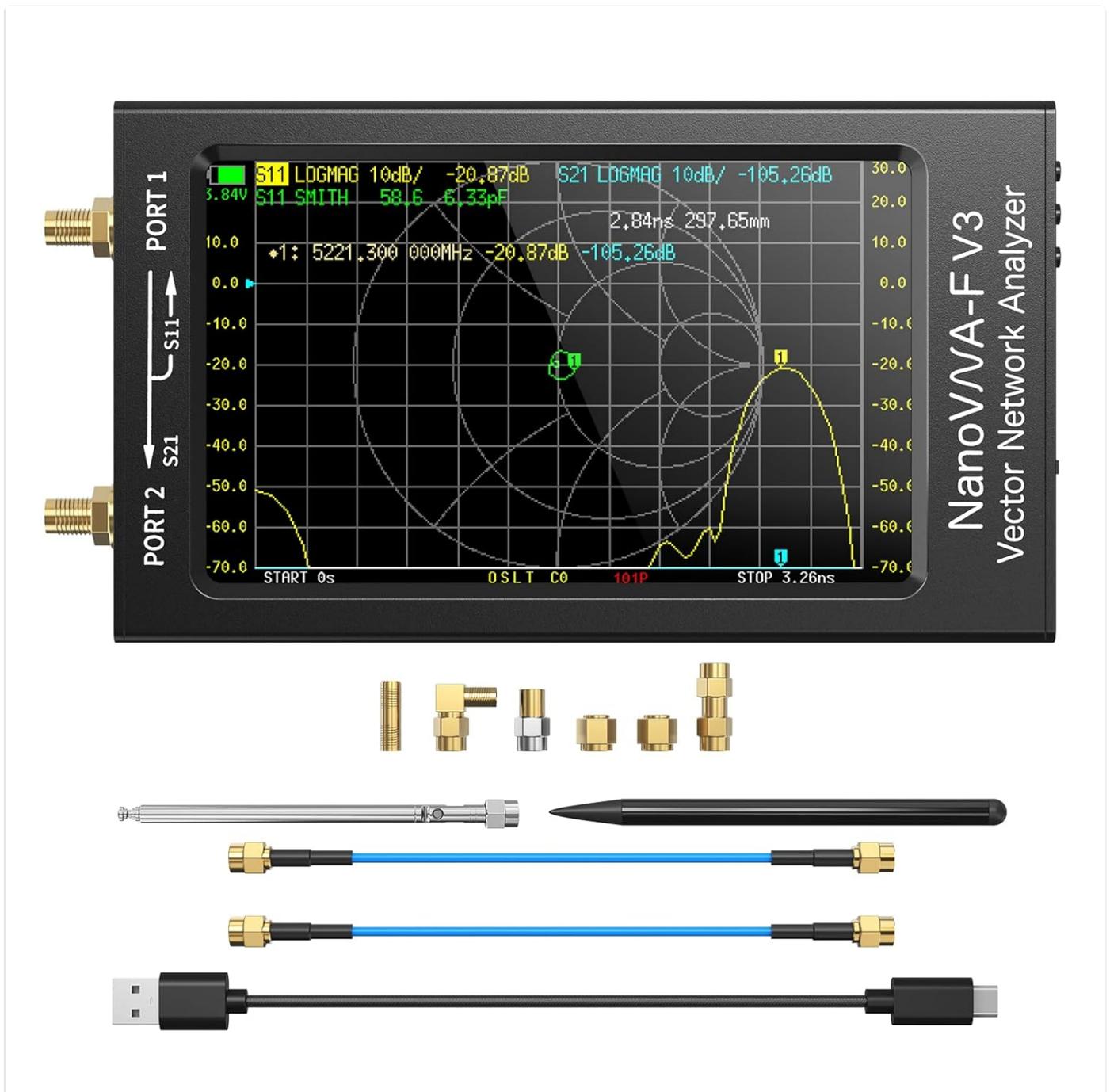
Figure 1.1: The NanoVNA-F V3 Vector Network Analyzer and its complete accessory kit.

2. PACKAGE CONTENTS

Upon opening the package, please verify that all items listed below are present and in good condition:

- 1 x NanoVNA-F V3 Unit
- 1 x Gold-Plated SMA Calibration Kit (LOAD, OPEN, and SHORT)
- 1 x SMA Female to SMA Female Connector
- 1 x SMA Male to SMA Male Connector
- 1 x SMA JKW Connector
- 2 x 20cm/7.9" RG405 Cables
- 1 x USB Type-C Data Cable

Package List

1 x NanoVNA-F V3

1 x SMA JKW Connector

1 x USB Type-C Data Cable

2 x 20cm/7.9" RG405 Cables

1 x SMA Male to SMA Male Connector

1 x SMA Female to SMA Female Connector

1 x Gold-Plated SMA Calibration Kit (LOAD, OPEN and SHORT)

PORT 2 S21 ← S11 → PORT 1

NanoVNA-F V3
Vector Network Analyzer

Figure 2.1: Detailed view of the NanoVNA-F V3 package contents.

3. DEVICE OVERVIEW

Familiarize yourself with the physical components and ports of the NanoVNA-F V3.

Figure 3.1: Front and side view of the NanoVNA-F V3, highlighting its ports and controls.

- **Port 1 (TX):** Transmit port for S11 measurements.
- **Port 2 (RX):** Receive port for S21 measurements.
- **Physical Buttons:** For navigation and control, complementing the touchscreen.
- **Indicator Light:** Provides status information, such as charging status.
- **Output 5V/1A:** USB output for powering external devices.
- **Power Switch:** To turn the device on or off.
- **Type-C Charging/Data Port:** For charging the internal battery and connecting to a PC.
- **4.3" IPS LCD+RTS:** The main display and resistive touchscreen interface.

4. Setup and Initial Use

4.1 Charging the Device

Before first use, ensure the NanoVNA-F V3 is fully charged. Connect the provided USB Type-C data cable to the device's Type-C port and a compatible USB power adapter (not included). The LED charging indicator will illuminate during charging and turn off when fully charged. A full charge typically takes approximately 3 hours and provides up to 8 hours of working time.

Figure 4.1: Charging the NanoVNA-F V3 via its USB Type-C port.

4.2 Powering On/Off

To power on the device, slide the power switch to the "ON" position. To power off, slide the switch to the "OFF" position.

4.3 Basic Navigation

The NanoVNA-F V3 features a 4.3-inch resistive touchscreen for primary interaction. Use the included stylus or your finger to navigate menus and select options. Physical buttons are also available for certain functions and navigation.

Figure 4.2: Interacting with the 4.3-inch sensitive touchscreen.

5. OPERATING THE NANOVNA-F V3

5.1 Calibration

Calibration is crucial for accurate measurements. The NanoVNA-F V3 supports up to 12 calibration result storage slots. Use the provided Gold-Plated SMA Calibration Kit (LOAD, OPEN, and SHORT) to perform a full calibration before making critical measurements. Refer to the on-screen instructions for the calibration procedure.

5.2 Measurement Functions

The NanoVNA-F V3 supports a wide array of measurement functions and display formats, making it versatile for various RF testing scenarios. These include:

- Log Mag (S11, S21)
- Linear Mag (S11, S21)

- Phase

- Smith Chart (R+jX, R+L/C)

- VSWR (Voltage Standing Wave Ratio)

- Polar

- Group Delay

- Resistance

- Reactance

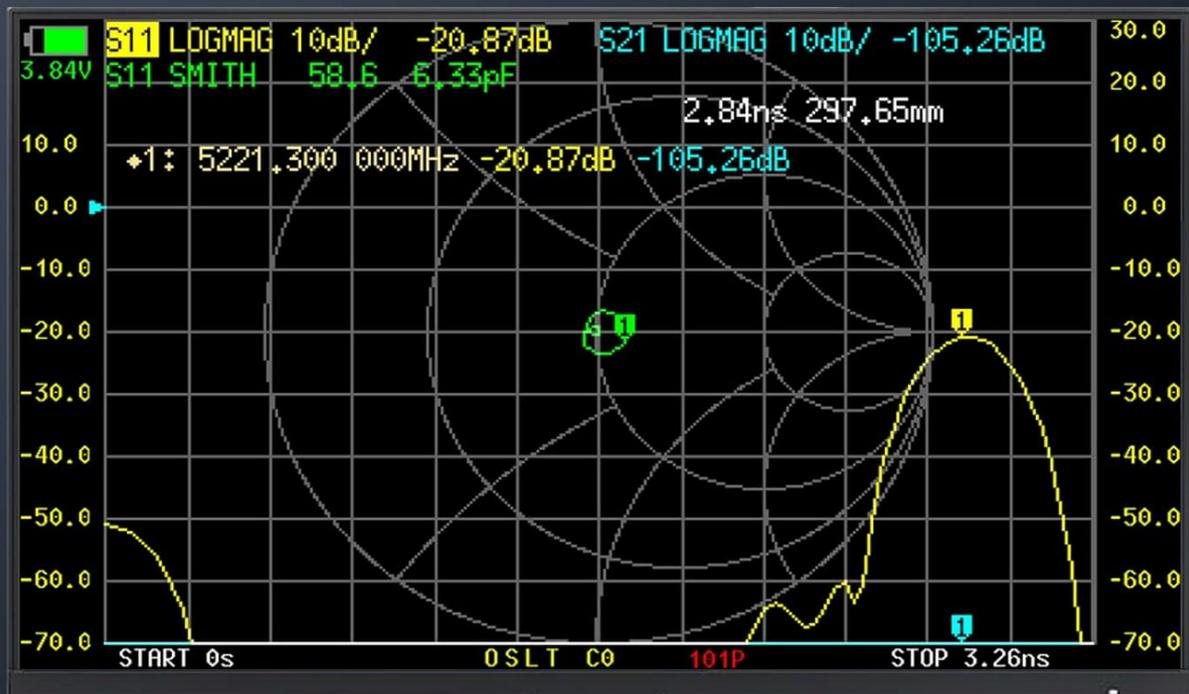- Time Domain Reflector (TDR) for cable length and fault detection.

Figure 5.1: The TDR function display, useful for analyzing cable characteristics.

5.3 Connecting to PC Software

The NanoVNA-F V3 can be connected to a PC for enhanced data analysis and control using compatible software such as NanoVNA-Saver. Connect the device to your computer using the provided USB Type-C data cable. Ensure the necessary drivers are installed on your PC for proper communication.

Figure 5.2: Using NanoVNA-Saver software for PC control and advanced analysis.

6. MAINTENANCE

6.1 Cleaning

To maintain the device's performance and appearance, regularly clean the exterior with a soft, dry cloth. For the screen, use a microfiber cloth specifically designed for electronic displays. Avoid using abrasive cleaners or solvents that could damage the casing or screen.

6.2 Battery Care

The NanoVNA-F V3 is equipped with a built-in 4500mAh rechargeable battery. To prolong battery life, avoid fully discharging the battery frequently. Store the device in a cool, dry place when not in use for extended periods. If storing for a long time, charge the battery to approximately 50% capacity.

6.3 Storage

Store the NanoVNA-F V3 and its accessories in a protective case to prevent physical damage and dust accumulation. Keep it away from extreme temperatures, humidity, and direct sunlight.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your NanoVNA-F V3.

Problem	Possible Cause	Solution
Device does not power on.	Low battery or power switch is off.	Ensure the power switch is in the "ON" position. Connect the device to a power source using the USB Type-C cable and allow it to charge for at least 30 minutes before attempting to power on again.
Inaccurate measurements.	Improper calibration or faulty cables/connectors.	Perform a full calibration using the provided calibration kit. Ensure all cables and connectors are securely attached and in good condition. Check for any physical damage to the SMA ports.
Touchscreen unresponsive.	Software glitch or physical damage.	Restart the device by powering it off and then on again. If the issue persists, ensure the screen is clean and free of debris. If still unresponsive, contact customer support.
Cannot connect to PC.	Incorrect cable, driver issues, or software incompatibility.	Ensure you are using the provided USB Type-C data cable. Verify that the necessary drivers for the NanoVNA-F V3 are installed on your PC. Try a different USB port on your computer. Ensure your PC software (e.g., NanoVNA-Saver) is up to date.

8. SPECIFICATIONS

Detailed technical specifications for the NanoVNA-F V3.

Feature	Specification
Model Number	NanoVNA-F V3
Frequency Range	1MHz - 6GHz
Display	4.3-inch IPS LCD (800x480) Resistive Touchscreen
S21 Dynamic Range	65 dB (3GHz), 60 dB (6GHz)
S11 Dynamic Range	50 dB (3GHz), 40 dB (6GHz)
Scan Points	101-801 points
Scan Speed	Up to 200 points/second
Calibration Result Storage	12 slots
Battery	Built-in 3.7V / 4500mAh rechargeable battery
Battery Life	Up to 8 hours
Charging Port	USB Type-C
Output	5V/1A

Feature	Specification
Dimensions	125mm x 75mm x 20mm (4.92" x 2.95" x 0.78")
Weight	Approx. 250g (0.55 lbs)
Case Material	Metal (Aluminum Alloy)
Compatible Devices	PC (with NanoVNA-Saver software)
Country of Origin	China

Parameter Comparison	Nanovna F-V3	Nanovna F-V2
Material	Aluminum Alloy(case)	Aluminum Alloy(case)
Screen	4.3" IPS LCD(800x480)	4.3" IPS TFT(800x480)
Operating Method	Resistive Touch	Resistive Touch+Keys
Frequency Range	1MHz-6GHz	50kHz-3GHz
RF output power	-10dBm(Max)	-9dBm (error within 1GHz: ±1dB)
S21 dynamic ranges	65dB (3GHz), 60dB (6GHz)	70dB (1.5GHz), 60dB (3GHz)
S11 dynamic ranges	50dB (3GHz), 40dB (6GHz)	50dB (1.5GHz), 40dB (3GHz)
Frequency Accuracy： +1ppm	+1ppm	<0.5ppm
Number of calibration points	801 points	101 points
Scan Point	101~801	101 points
Number of Traces	4	4
Number of mark Points	4	4
Calibration Result Storage	12	5
Sweep Speed	200 pts/s	1.9s/1 time (50kHz~3000MHz full frequency band)
Battery	3.7V/4500mAh	3.7V/5000mAh
USB-A Power out	5V/1A	5V/1A
Charge/Data	USB Type-C	USB Type-C
Item size	125 *75* 20mm/4.92*2.95*0.78in	140 * 73 * 20mm / 5.5 * 2.9 * 0.8in
Item weight	250g	270g
Packing weight	500g / 1.1lb	500g / 1.1lb

Figure 8.1: Detailed parameter comparison between NanoVNA-F V3 and NanoVNA-F V2.

9. WARRANTY AND SUPPORT

Seesii stands behind the quality of the NanoVNA-F V3 with comprehensive customer support and warranty services.

- **Warranty:** The NanoVNA-F V3 comes with a 3-year warranty.
- **Money-Back Service:** A 90-day money-back service is provided.
- **Technical Support:** 7*24 hours technical service and lifetime customer support are available.
- **FCC Compliance:** The product complies with FCC regulations, backed by a Supplier's Declaration of Conformity (SDoC), ensuring its safety and reliability.

For any questions, technical assistance, or warranty claims, please contact Seesii customer service. Our dedicated after-sales service team is committed to assisting you promptly and resolving any issues you may encounter.