GOOZEEZOO NanoVNA-F V3

GOOZEEZOO NanoVNA-F V3 Vector Network Analyzer

Instruction Manual

1. Introduction

The GOOZEEZOO NanoVNA-F V3 is an upgraded Vector Network Analyzer (VNA) designed for precise measurement of RF components and antenna systems. With an extended frequency range of 1MHz to 6GHz, this device is suitable for a wide array of applications, including testing MF/HF/VHF/UHF/SHF bands, ISM band antennas, WiFi antennas, Bluetooth antennas, and GPS antennas. It supports various display formats such as Log Mag, Linear Mag, Phase, Smith R+jX, Smith R+L/C, VSWR, Polar, Group delay, Resistance, and Reactance. Additionally, it features a TDR function for cable length measurements.

Figure 1.1: The NanoVNA-F V3 Vector Network Analyzer and its included accessories, including SMA cables, adapters, and a stylus.

2. Key Features

- **Wide Frequency Range:** 1MHz to 6GHz, enabling comprehensive testing across various RF bands.
- **High Dynamic Range:** S21 dynamic range of 65 dB and S11 dynamic range of 50 dB.
- **Enhanced Accuracy:** Robust metal casing provides durability and improved measurement precision.
- **Fast Scanning:** Scan speed up to 200 points/s with a maximum of 801 scanning points.
- **Large Touch Screen:** 4.3-inch high-brightness IPS resistive touch screen for intuitive operation.
- **Long Battery Life:** Equipped with a 4500mAh lithium-ion battery, providing up to 5 hours of operation.
- **USB Type-C Connectivity:** For charging and data transfer.
- **TDR Function:** Useful for measuring cable lengths.

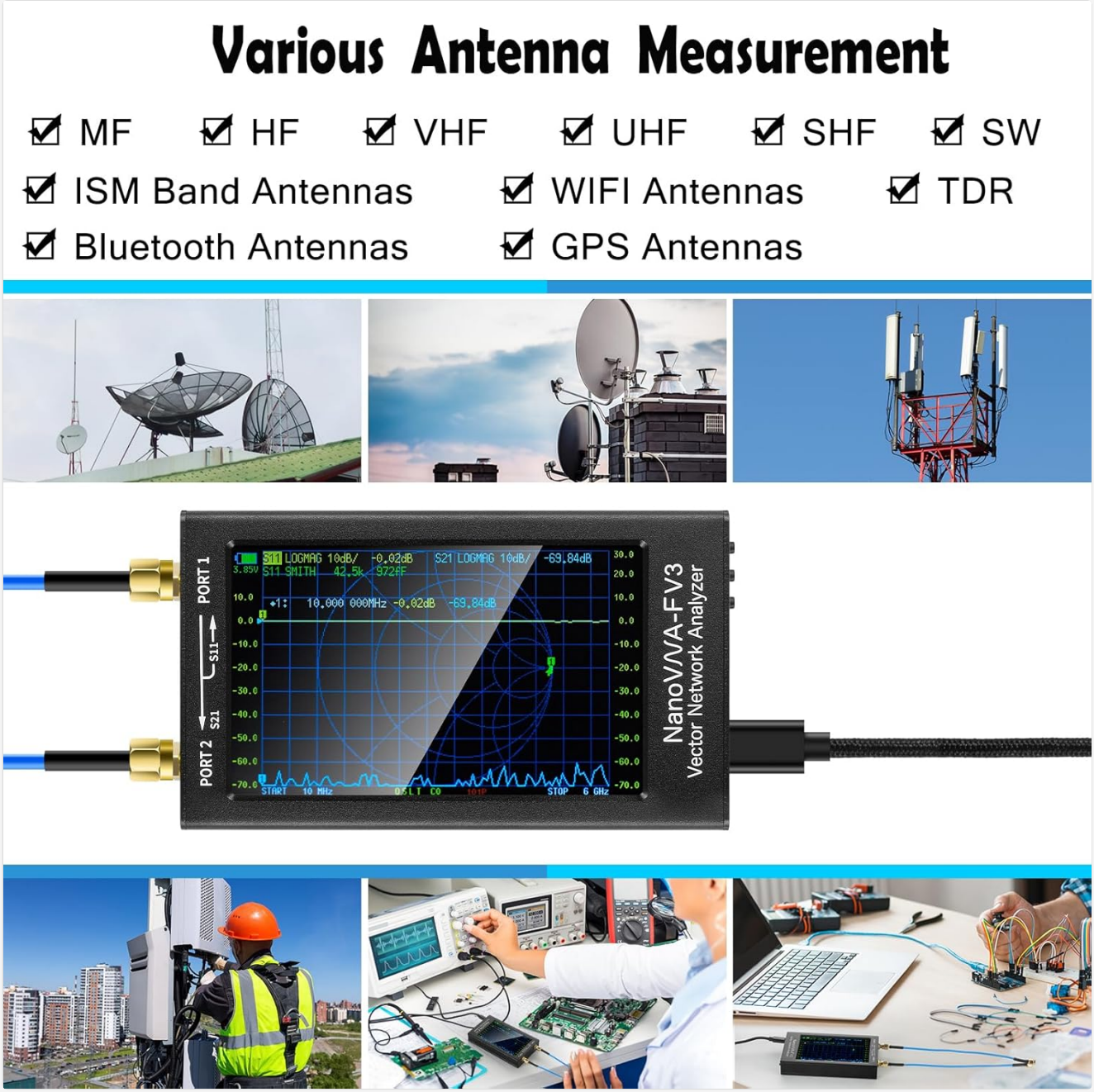


Figure 2.1: A comparison highlighting the upgraded features of the NanoVNA-F V3, including its extended frequency range and increased scan points, compared to previous models.

3. Product Components and Interface

The NanoVNA-F V3 features a compact design with clearly labeled ports and controls for ease of use.

- **4.3" IPS LCD + RTS:** High-resolution resistive touch screen for display and interaction.
- **Metal Case:** Durable and shielded enclosure.
- **Charging / Data Port:** USB Type-C port for power and data communication.
- **Power Switch:** To turn the device ON/OFF.
- **Output 5V / 1A:** Power output port.
- **Indicator Light:** Provides status feedback.
- **Physical Buttons:** For navigation and control.
- **SMA Connectors (PORT 1 & PORT 2):** Standard RF connectors for connecting to Devices Under Test (DUTs).

Figure 3.1: Detailed view of the NanoVNA-F V3's physical interface, including its 4.3-inch screen, metal case, charging/data port, power switch, output, indicator light, and physical buttons.

4. Initial Setup

4.1 Charging the Device

Before first use, ensure the NanoVNA-F V3 is fully charged. Connect the provided USB Type-C cable to the device's charging port and a compatible USB power source (e.g., a computer USB port or a 5V USB charger). The indicator light will show charging status.

4.2 Powering On/Off

To power on the device, press and hold the Power Switch until the screen illuminates. To power off, press and hold the Power Switch again until the device shuts down.

5. Basic Operation

5.1 Navigating the Interface

The NanoVNA-F V3 utilizes a resistive touch screen. Use the included stylus for precise interaction with the on-screen menus and controls. Physical buttons can also be used for navigation and selection.

5.2 Performing Measurements

The NanoVNA-F V3 can measure S11 (reflection coefficient) and S21 (transmission coefficient). Connect your Device Under Test (DUT) to PORT 1 for S11 measurements or between PORT 1 and PORT 2 for S21 measurements using appropriate SMA cables and adapters.

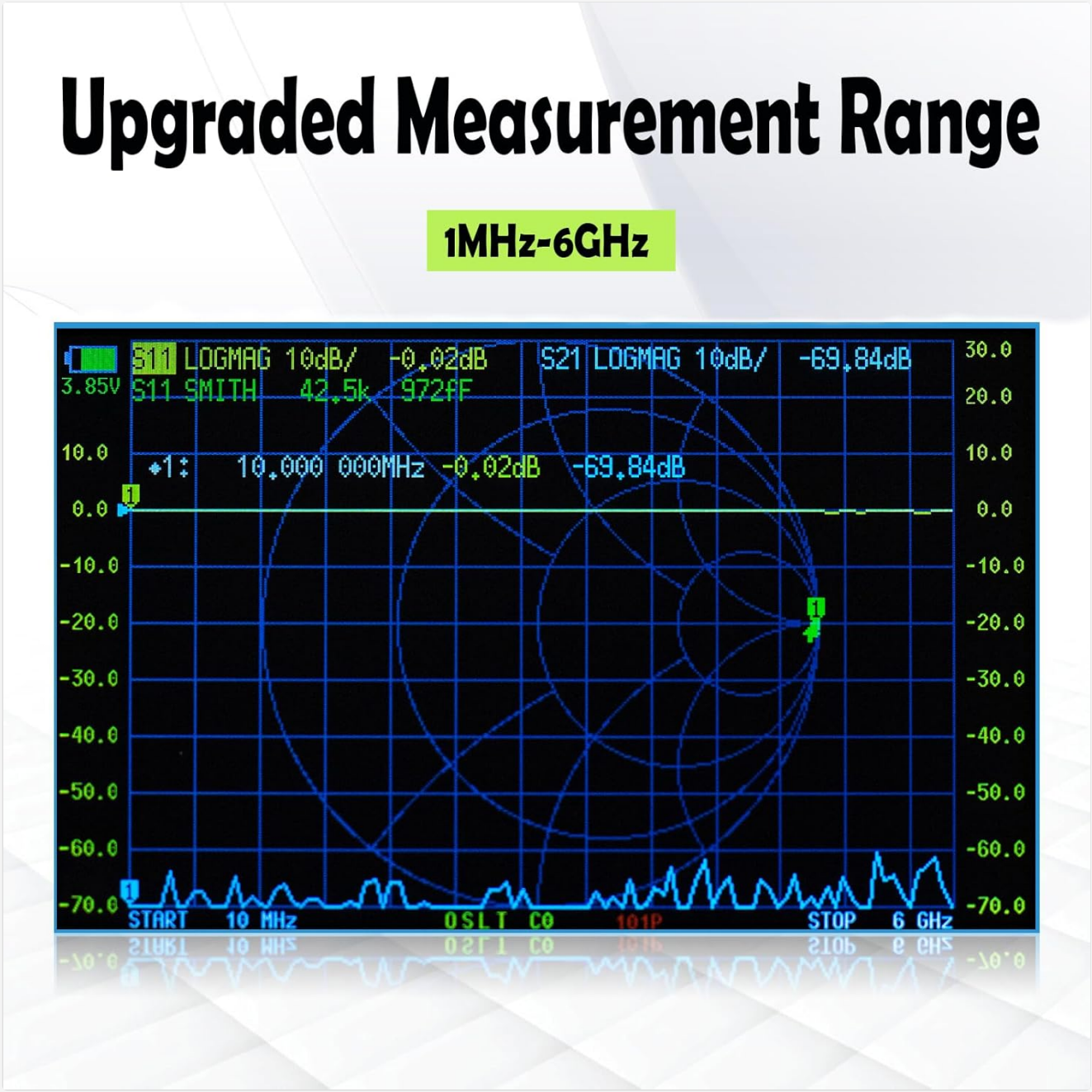
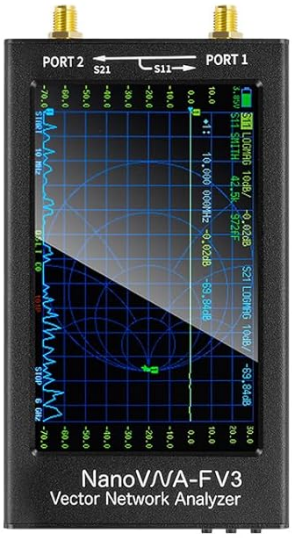


Figure 5.1: The NanoVNA-F V3 displaying measurement results, including S11 and S21 parameters, across its upgraded 1MHz-6GHz frequency range.

5.3 Display Modes

The device supports various display formats to visualize measurement data:

- Log Mag (Logarithmic Magnitude)
- Linear Mag (Linear Magnitude)
- Phase
- Smith R+jX (Smith Chart with Resistance and Reactance)
- Smith R+L/C (Smith Chart with Resistance and Inductance/Capacitance)
- VSWR (Voltage Standing Wave Ratio)
- Polar
- Group Delay
- Resistance
- Reactance



	NanoVNA-F V3	NanoVNA-F V2	NanoVNA-F
Frequency Range	1MHz - 6GHz	50kHz~3GHz	10kHz-1.5GHz
Scan Points	801	201	101
Calibration State Storages	12	5	5
Case	Metal Case	Metal Case	Metal Case

Figure 5.2: Examples of various antenna types and RF components that can be measured using the NanoVNA-F V3, demonstrating its versatility.

6. Advanced Functions

6.1 TDR Function

The Time Domain Reflectometry (TDR) function is used to characterize and locate faults in cables, as well as measure cable lengths. Refer to the on-screen menu for TDR setup and interpretation.

6.2 PC Software Connectivity

The NanoVNA-F V3 can be connected to a computer via the USB Type-C cable for data transfer and control using dedicated PC software. This allows for larger display, advanced analysis, and data logging.

Figure 6.1: The NanoVNA-F V3 connected to a laptop, demonstrating the availability and use of PC software for enhanced analysis and control.

7. Care and Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the device. Avoid abrasive cleaners or solvents.
- **Storage:** Store the NanoVNA-F V3 in a cool, dry place away from direct sunlight and extreme temperatures.
- **Handling:** Handle the device with care to prevent damage to the screen or connectors.
- **Battery Care:** For long-term storage, it is recommended to charge the battery to approximately 50% to prolong its lifespan.

8. Troubleshooting

- **Device not powering on:** Ensure the battery is charged. Connect to a power source and try again.
- **Inaccurate measurements:** Perform a calibration before taking critical measurements. Ensure connectors are clean and securely fastened. Check for damaged cables or adapters.
- **Touch screen unresponsive:** Use the stylus for better precision. If completely unresponsive, try restarting the device.
- **PC software connection issues:** Ensure the correct drivers are installed on your computer. Check the USB Type-C cable for damage.

9. Technical Specifications

Feature	Specification
Product Dimensions	8.66 x 4.3 x 1.1 inches
Weight	1.09 Pounds
Batteries	1 Lithium Ion battery (included)
Frequency Range	1MHz – 6GHz
S21 Dynamic Range	65 dB
S11 Dynamic Range	50 dB
Scan Speed	Up to 200 points/s
Max Scanning Points	801
Screen Size	4.3 inch IPS Resistive Touch Screen
Battery Capacity	4500mAh
Charging Interface	USB Type-C

10. Warranty and Support

For information regarding warranty, technical support, and service, please refer to the official GOOZEEZOO website or contact their customer service directly. Keep your purchase receipt for warranty claims.