**Seesii TinySA V0.3.1**

# Seesii TinySA Spectrum Analyzer V0.3.1 Instruction Manual

Portable Frequency Analyzer and Signal Generator

## 1. INTRODUCTION

The Seesii TinySA Spectrum Analyzer V0.3.1 is a compact and versatile tool designed for radio frequency analysis and signal generation. This manual provides essential information for setting up, operating, and maintaining your device, ensuring optimal performance and longevity. It combines the functionality of a spectrum analyzer and a signal generator in a portable, touchscreen-enabled unit.

## 2. PRODUCT FEATURES

- **Frequency Range:** High-quality MF/HF/VHF input for 0.1MHz-350MHz, and UHF input for 240MHz-960MHz. Features switchable resolution bandpass filters between 2.6kHz and 640kHz.

- **Built-in Calibration Signal Generator:** Provides MF/HF/VHF sinus output between 0.1MHz-350MHz and UHF square wave output between 240MHz-960MHz. Includes a calibration signal generator for automatic self-test and low input calibration.

- **Display:** Equipped with a 2.8-inch touchscreen color display showing 290 scan points.

- **PC Control:** Connects to a PC via USB (Serial over USB CDC protocol) for advanced control and analysis. Drivers for Windows install automatically; Linux drivers are built into the kernel.

- **Portability:** Built-in rechargeable battery provides a minimum of 2 hours of portable use.

- **ESD Protection:** Engineered with higher antistatic levels for increased durability and service life.

- **Micro SD Card Slot:** Allows for storing measurements and configurations.

## 3. PACKAGE CONTENTS

The Seesii TinySA Spectrum Analyzer V0.3.1 package includes the following items:

- 1x Tiny Spectrum Analyzer

- 2 x 20cm RF Cable

- 1 x USB Cable

- 1 x SMA Female to Female Connector

- 1x Touchscreen Pen

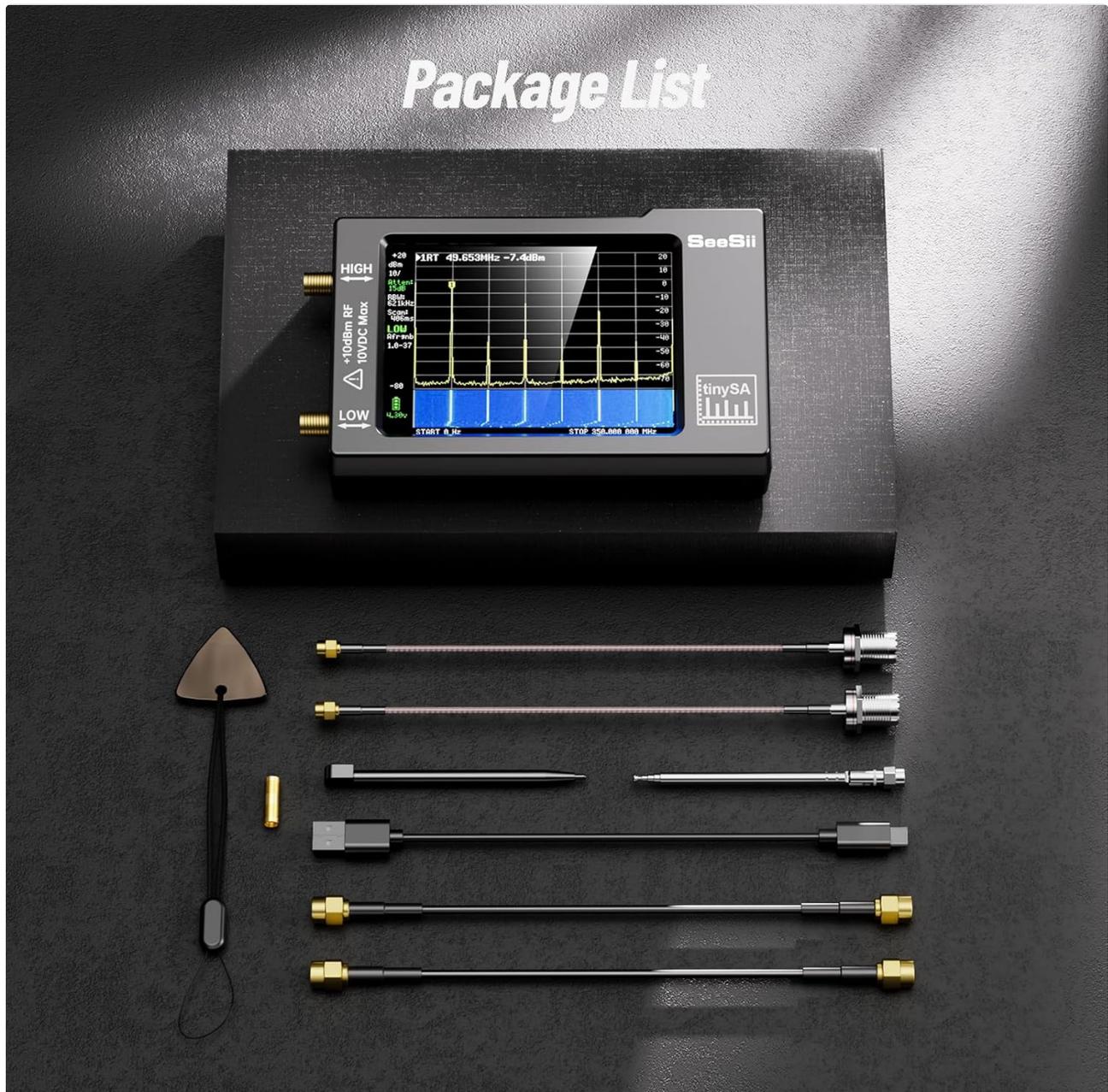- 2x SMA Male to UHF Female Cables

- 1 x SMA Telescopic Antenna



Figure 3.1: All items included in the Seesii TinySA Spectrum Analyzer V0.3.1 package.

## 4. DEVICE OVERVIEW

Familiarize yourself with the device's physical components and interfaces.

### 4.1. Front Panel and Connectors

Figure 4.1: Front view of the TinySA Spectrum Analyzer, showing the touchscreen display and SMA connectors.

- **Display:** 2.8-inch touchscreen for viewing measurements and interacting with the menu.

- **HIGH Input (SMA):** Used for MF/HF/VHF frequency range (0.1MHz-350MHz).

- **LOW Input (SMA):** Used for UHF frequency range (240MHz-960MHz).

## 4.2. Top and Bottom Panels

# Device Interface



Figure 4.2: Side view of the TinySA Spectrum Analyzer, highlighting the power, USB, and storage ports.

- **Power On/Off Switch:** Located on the top panel.
- **Multi-function Switch:** A rocker switch for navigation and selection within the menu.
- **Battery LED:** Indicates battery status.
- **Type-C USB Interface:** For charging and PC connectivity.
- **Micro SD Card Slot:** For data storage.
- **3.5mm Headphone Jack:** For audio output (if applicable).

## 5. SETUP

Before operating your TinySA, ensure it is properly set up.

### 5.1. Initial Power On and Self-Test

1. Connect the CAL and RF ports using one of the provided RF cables.

2. Turn on the device using the Power On/Off switch.

3. On the touchscreen, navigate to **CONFIG**, then select **SELF TEST**.

4. The device will run a series of internal tests. Ensure all tests pass. If any test fails, refer to the Troubleshooting section.

## 5.2. Level Calibration

For accurate measurements, perform a level calibration.

1. Ensure the CAL and RF ports are connected with an RF cable.

2. Navigate to **CONFIG**, then select **LEVEL CAL**.

3. Choose the appropriate calibration range (e.g., **CALIBRATE 100kHz to 5.34GHz**).

4. Follow the on-screen prompts to complete the calibration process.

## 6. OPERATING INSTRUCTIONS

The TinySA operates in two primary modes: Spectrum Analyzer and Signal Generator.

### 6.1. Spectrum Analyzer Mode

This mode allows you to visualize the frequency spectrum of RF signals.

1. **Accessing Mode:** From the main screen, tap the screen to bring up the menu. Select **MODE**, then **Spectrum Analyzer**.

2. **Setting Frequency Range:** Select **FREQUENCY** from the menu. You can set **START**, **STOP**, **CENTER**, and **SPAN** frequencies using the on-screen keypad.

3. **Using Markers:** Select **MARKER** from the menu. You can add multiple markers (e.g., 2, 4, 6, 8 markers) to identify specific peaks and their frequencies/strengths.

4. **Pausing and Saving:** To freeze the current display, select **PAUSE** from the menu. To save the screen capture, go to **STORAGE** and select **SAVE CAPTURE**. You can name the file using the on-screen keyboard.

5. **Ultra Mode:** To extend the frequency range up to 6GHz, navigate to **CONFIG** > **MORE** > **ENABLE ULTRA**. You will need to enter an unlock code (4321).

### 6.2. Signal Generator Mode

This mode allows you to generate various RF signals for testing.

1. **Accessing Mode:** From the main screen, tap the screen to bring up the menu. Select **MODE**, then **Signal Generator**.

2. **Setting Frequency:** Tap on **FREQ** and enter the desired frequency using the on-screen keypad.

3. **Setting Level:** Tap on **LEVEL** and enter the desired output power in dBm.

4. **Modulation:** Select **MOD** to choose between AM, FM, or None. You can adjust modulation frequency, AM depth, or FM deviation.

5. **Output Type:** Select **OUTPUT** to choose between Sine or Square wave.

6. **Sweep:** You can enable a frequency sweep by selecting **START SWEEP** and configuring the sweep parameters.

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Video 6.1: This video provides a comprehensive overview of the TinySA Spectrum Analyzer, demonstrating its features, operation modes, and various testing capabilities. It covers topics such as spurious emissions testing, power output measurement, signal generation for receiver sensitivity, and the use of attenuators. (Relevant sections: 0:30-1:05 for device overview, 1:05-1:25 for

spurious emissions, 1:25-1:45 for power output, 1:45-1:55 for signal generator, 1:55-2:15 for basic spectrum analysis, 2:15-2:25 for frequency span, 2:25-2:35 for saving captures, 2:35-2:55 for self-test/calibration, 2:55-3:05 for multiple markers, 3:05-3:45 for Baofeng harmonic test, 3:45-3:55 for Ultra mode, 3:55-4:15 for signal generator demo).

## 7. Maintenance

Proper maintenance ensures the longevity and accuracy of your TinySA.

- **ESD Protection:** The device is engineered with ESD protection. Always handle with care to avoid static discharge, especially when connecting or disconnecting cables.
- **Dust Covers:** Keep the dust covers on the SMA connectors when not in use to prevent dust and static damage.
- **Cleaning:** Use a soft, dry cloth to clean the device. Avoid using harsh chemicals or abrasive materials.

## 8. Troubleshooting

This section addresses common issues and their solutions.

- **Device Not Powering On:** Ensure the battery is charged. Connect the device to a USB power source.
- **Inaccurate Measurements:** Perform a **SELF TEST** and **LEVEL CALIBRATION** as described in the Setup section.
- **Testing High Power Signals:** Always use an appropriate attenuator (e.g., 40dB attenuator for 5W radios) when connecting a high-power radio to the TinySA to prevent damage to the device.
- **Low Power Output from Device Under Test:** Use the TinySA in Spectrum Analyzer mode to measure the power output of the device. This can help diagnose hardware or firmware issues.
- **Spurious Emissions:** Use the Spectrum Analyzer mode to check for unwanted signals transmitted on frequencies other than the intended one.

## 9. Specifications

- **Frequency Range:** 100kHz to 960MHz (MF/HF/VHF and UHF inputs). Up to 6GHz in Ultra mode.
- **Display:** 2.8-inch Touchscreen
- **Impedance:** 50 Ohms
- **Antenna:** SMA Telescopic
- **Manufacturer:** Seesii

## 10. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official Seesii website or contact their customer service directly. Keep your purchase receipt as proof of purchase.